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Tobacco Control Lessons Learned: The Impact of State and Local Policies

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I. Introduction

Much of the progress in reducing tobacco use in the United States over the past few decades can be attributed to the adoption and strengthening of tobacco control policies at the state and local levels. Inflation-adjusted cigarette taxes have more than tripled since the early 1980s, and significant taxes have been adopted in several localities. On average, federal, state, and local cigarette taxes currently add over one dollar – much more in some localities - to the price of a pack of cigarettes. Several states earmark a portion of the revenues generated from these taxes to fund comprehensive state tobacco control programs that aim to prevent smoking initiation and encourage smoking cessation; others use the payments they receive from tobacco companies as part of the Master Settlement Agreement (MSA) to fund these programs. Every state and thousands of communities now restrict smoking in at least some public places, with a growing number banning smoking in virtually all indoor public places, including restaurants, bars and worksites. In response to federal legislation, all states have implemented policies prohibiting the sale of tobacco products to minors, with many states and communities adopting policies that go well beyond the mandated minimum.

Not surprisingly, tobacco companies and related organizations have argued against many of these policies, often making false or overstated claims about the adverse economic impact of higher tobacco taxes, stronger smoke-free air policies, and others. Cigarette company marketing spending has gone up considerably over the past thirty years, despite increasing constraints, with some evidence that at least some of the marketing aims to offset the effects of strong tobacco control policies. However, greater awareness of the health consequences from tobacco use and exposure to tobacco smoke, a growing evidence base on the effectiveness of various policy and

other interventions in reducing tobacco use, and well-organized coalitions advocating for stronger state and local policies have been effective in overcoming the industry's arguments.

This chapter describes the evolution of key tobacco control policies over the past several decades and reviews the evidence base on the effectiveness of these policies in reducing tobacco use and the public health consequences it causes. Key policies include tobacco taxation, smoke-free air policies, policies targeting youth, and limits on tobacco company marketing; while state and local policies are the focus of the chapter, relevant federal policies in each area will be briefly described. Policies covered in other chapters, such as state litigation against tobacco companies, anti-smoking advertising and other countermarketing, and cessation support will not be reviewed below. Finally, arguments raised in opposition to stronger tobacco control policies are discussed, along with the evidence on the validity of these arguments.

II. Tobacco Taxation

Cigarettes and other tobacco products are taxed in various ways by federal, state, and local governments. Historically, revenue generation was the primary motivation for these taxes. In recent years, however, growing evidence on the impact of higher tobacco taxes and prices on youth and adult tobacco use has led to increased interest in using tobacco taxation to reduce tobacco use and its consequences. This section reviews the recent history of these taxes, their relationship to price, and evidence on the impact of price on tobacco use, both generally and in key populations.

Federal Tobacco Taxation

The federal government has applied excise taxes to tobacco products in the U.S. since the late 18th century; these taxes rose and fell over time depending on the government's revenue needs, often rising during wartime and falling during peace and prosperity. The federal cigarette

excise tax was set at eight cents per pack in November 1951 and remained at that level until it was doubled in January 1983 as part of deficit reduction legislation. Since then, the tax has risen modestly, most recently increasing from 34 to 39 cents per pack in January 2003. Given the infrequent and typically small increases in the federal cigarette tax since 1951, the current tax amounts to about sixty percent of the inflation adjusted value of the 1951 tax.

In addition to cigarettes, federal excise taxes are applied to most other tobacco products, including cigars, pipe tobacco, chewing tobacco, snuff, and roll-your-own tobacco (with a separate tax on rolling papers). These taxes generally account for a lower share of retail price than the federal cigarette tax. Like the cigarette tax, federal excise taxes on other tobacco products have been raised infrequently and modestly over time.

In general, federal tobacco taxes appear to be largely motivated by the revenue generating potential of these taxes. While the public health benefits of higher federal tobacco taxes have been raised in debates over increases these taxes, the small, infrequent increases of the past 25 years have generally been adopted as part of budget deficit legislation (e.g. the Tax Equity and Fiscal Responsibility Act of 1982 that doubled the tax effective January 1983 and the Omnibus Budget Reconciliation Act of 1990 that included four cent increases in 1991 and 1993) or to provide funding for new programs (e.g. the January 2003, five-cent per pack increase that funded an expansion of the State Children's Health Insurance Program).

State Tobacco Taxation

All states apply an excise tax on cigarettes. Iowa, in 1921, was the first to adopt a state cigarette excise tax; not surprisingly, one of the major tobacco growing and manufacturing states - North Carolina - was the last (in 1969). Similarly, most states impose excise taxes on other tobacco products and the sales tax in most states is applied to tobacco products (usually to the

price inclusive of excise taxes). There is considerable variation across states in these taxes, as well as within most states over time. As of July 2007, the simple average of cigarette excise taxes in the 50 states and DC was just over \$1.07 per pack, with taxes as high as \$2.575 per pack in New Jersey. As might be expected, given tobacco's historical and economic importance, cigarette taxes in the six major tobacco growing and/or manufacturing states (Kentucky, North Carolina, Virginia, South Carolina, Georgia and Tennessee) are low, ranging from seven cents per pack in South Carolina to 67 cents per pack in Tennessee – an average of less than 30 percent of the average cigarette tax in other states.

State tobacco taxes have increased considerably over the past 25 years, with the inflation adjusted average state tax more than tripling between 1982 and mid-2007. Nearly all states, even most major tobacco states, have increased their cigarette excise tax in recent years, with multiple increases in several states. Politicians from both parties have supported cigarette and other tobacco product excise tax increases, often pointing to the health benefits of the reduced tobacco use that result from the higher taxes. Similarly, public support for these taxes tends to be high, particularly when the new revenues generated from the tax increase are earmarked for comprehensive tobacco control and other public health programs.

The first evidence of states using higher taxes to reduce tobacco use and improve public health comes from the numerous state cigarette tax increases following the dissemination of early evidence on the health consequences of smoking in the mid-1950s and 1960s. From 1950 through 1954, there were a total of 14 state cigarette excise tax increases (and one reduction), and average taxes in tobacco-growing/manufacturing were only slightly below those in other states (USDHHS, 2000). As information spread about the health consequences of smoking, many states raised their cigarette taxes, some multiple times; from 1955 through 1971, over ten

states per year, on average, raised their tax. Not surprisingly, major tobacco growing and manufacturing states were least likely to do so; indeed, Virginia and Kentucky lowered their taxes. By the end of fiscal year 1971, the average tax in the six major tobacco growing and manufacturing states was less than 60 percent of that in other states.

Concerns about interstate cigarette smuggling in response to differences in state excise taxes deterred states from continuing to raise taxes over the next decade. Beginning in 1982, however, states again began raising taxes, in part because of the need for revenues caused by the significant economic slowdown of the early 1980s and in part a response to the 1982 legislation doubling the federal cigarette tax. However, it also seems likely that at least some of these tax increases were a response to the early economic research (described below) demonstrating that higher cigarette taxes reduced smoking, particularly among youth and young adults (Lewit and Coate, 1981; Lewit, Coate, and Grossman, 1982). Further interest in raising state taxes to discourage tobacco use was almost certainly stimulated by subsequent studies describing the impact of the 1983 federal tax increase on smoking and health, concluding that this increase would prevent over 100,000 deaths caused by smoking (e.g. Warner, 1986; Harris, 1987).

This emerging evidence on the effectiveness of state cigarette taxes in reducing smoking and improving public health inspired a renewed interest in using tax increases to discourage tobacco use. In 1988, California led this next wave of state cigarette tax increases with a voter initiative - Proposition 99, the Tobacco Tax and Health Protection Act - which increased the state's cigarette excise tax by 25 cents per pack (the then largest single increase in a state cigarette tax) as well as raised other tobacco product taxes. Voters of the state went further and earmarked a portion of the revenues generated from these taxes to fund a comprehensive tobacco control program, dedicating 25 percent of the new revenues to this program. Massachusetts

voters did the same in 1992, approving Question 1 which raised the state cigarette tax by 25 cents per pack, increased other tobacco product taxes, and recommended that part of the new revenues generated by the tax be used to fund a comprehensive tobacco control program. Since then, a number of other states have raised their tobacco taxes and used the revenues from these taxes to fund comprehensive programs, with the public health benefits of these tax increases and, if not the most, motive for these tax increases in nearly every state.

Local Tobacco Taxes

Hundreds of communities also tax tobacco products, with most applying relatively small taxes to cigarettes and, in some cases, other tobacco products. In recent years, however, a few cities and counties have adopted significant local cigarette taxes. In 2002, New York city's cigarette tax was increased from 8 cents per pack to \$1.50 per pack, with the public health impact of the higher tax the primary rationale for this unprecedented rise. More recently, Cook County Illinois raised its cigarette tax to \$1.00 per pack, followed a year later by an increase to \$2.00 per pack, while Chicago's cigarette tax rose to 68 cents per pack. When state and federal taxes are added, smokers buying cigarettes in Chicago pay \$4.05 per pack in excise taxes alone – the highest in the country. Unlike the local tax in New York City, these tax increases appear to have been largely motivated by the revenues that would be generated from the higher taxes.

Tobacco Taxes and Tobacco Product Prices

Recent, sizable increases in state and local cigarette taxes have contributed to a significant increase in inflation adjusted cigarette prices over the past decade. While many factors influence cigarette and other tobacco product prices, several studies demonstrate that cigarette tax increases result in comparable (and at times larger) increases in cigarette prices.

Figure One illustrates the clear relationship between state cigarette taxes and state-level, average cigarette prices.

[Figure One about here]

Likewise, the settlements of state and local lawsuits brought against tobacco companies have raised cigarette prices. The pass through of costs resulting from settlements of lawsuits with Mississippi, Florida, Texas, and Minnesota in 1997 and 1998 accounted for most, if not all, of the over 25 cents per pack increase in wholesale prices during this period. The MSA which settled remaining lawsuits resulted in an immediate 45 cent per pack increase in prices.

Figure Two illustrates the significant increase in cigarette prices over the past decade, largely resulting from the increases in state cigarette excise taxes and the pass through of settlement costs. Between 1997 and 2003, inflation adjusted cigarette prices increased by about 75 percent.

[Figure Two about here]

Tobacco Taxes, Prices, and Overall Tobacco Use

Perhaps the most fundamental principle of economics is that of the “downward sloping demand curve” which states that as the price of a product rises, the consumption of that product falls. For many years, the conventional wisdom was that addictive products like cigarettes might be an exception to this basic principle. Over the past few decades, well over one hundred studies for the US, various states, and other high-income countries have clearly and consistently demonstrated that higher cigarette and other tobacco product prices reduce tobacco use. These reductions in use result from increased cessation among current tobacco users, reduced initiation among youth, less relapse among former users, and reductions in the amount consumed by those who continue to consume.

The inverse relationship between cigarette prices and cigarette consumption in the US is illustrated in Figure Three. Due to the lack of change in federal and state cigarette taxes in the 1970s and early 1980s, along with the high inflation of that period, inflation adjusted (real) cigarette prices were falling and US cigarette consumption was rising. Beginning with the doubling of the federal cigarette excise tax in 1983, and followed by industry price increases around the time of the federal tax increase and a number of subsequent state cigarette tax increases, inflation adjusted cigarette prices began to rise and cigarette consumption declined. These trends continued until 1993 and what has come to be known as “Marlboro Friday.” In April 1993, Philip Morris implemented a variety of promotions for Marlboro that lowered price by about 25 percent; these price reductions were quickly matched by other companies and spread to other brands. The downward trend in cigarette consumption was halted by the price cuts and consumption remained flat for the next few years as inflation adjusted prices remained steady. More recently, as prices rose rapidly due to numerous state tax increases and the pass through of settlement costs, US cigarette consumption has declined sharply.

[Figure Three about here]

Economists use the “price elasticity of demand” to quantify the impact of a change in price on a change in consumption. Formally, the price elasticity of demand is defined as the percent change in consumption that results from a one percent increase in price. While the many studies of cigarette demand produce a wide range of estimates for the price elasticity of demand, most of the estimates fall in the narrow range from -0.25 to -0.5, implying that a ten percent increase in cigarette prices reduces overall cigarette consumption by between 2.5 and five percent (U.S. Department of Health and Human Services (USDHHS), 2000; Chaloupka, et al., 2000; Gallet and List, 2003).

While there are fewer studies for other tobacco products, the findings from these studies are similarly consistent in showing that higher taxes and prices for these products are effective in reducing their use (USDHHS, 2000; Chaloupka, et al., 2000). In addition, these studies indicate that tobacco products are substitutes for one another, implying, for example, that if the price of cigarettes increases relative to the price of smokeless tobacco products, some of the reductions in cigarette smoking that result would be partially offset by increases in smokeless tobacco consumption (e.g. Ohsfeldt, Boyle and Capilouto, 1999). Similarly, a few recent studies show that increases in cigarette prices lead to changes in brands among cigarette smokers, including switching from premium to discount brands (e.g. Tauras, Peck and Chaloupka, 2006) and switching to longer and/or cigarettes higher measured tar and nicotine (e.g. Evans and Farrelly, 1998).

The experiences from US states that have adopted significant increases in cigarette taxes, as well as those from a variety of high income countries where cigarette prices are well above prices in the US and where taxes account for a much higher share of cigarette prices suggest that these estimates apply over a wide range of prices and that additional increases in taxes and prices would cause further reductions in cigarette smoking. Recent studies that account for the addictive nature of cigarette smoking find that the effects of price are about twice as large in the long run, as addicted smokers fully adjust over time to permanent changes in price (Chaloupka, 1991; Becker, Grossman and Murphy, 1994; Chaloupka, Tauras and Grossman, 2000).

Taxes, Prices, and Adult Prevalence and Cessation

A growing number of studies based on individual-level survey data attempt to disentangle the effects of taxes and prices on prevalence and consumption. These studies generally find that about half of the drop in overall cigarette consumption that results from an increase in price

results from a decline in the prevalence of smoking, with the remainder accounted for by reductions in the number of cigarettes consumed by continuing smokers (e.g. Hu, et al., 1995; Farrelly, et al., 2001). Estimates from most of these studies indicate that a ten percent increase in price reduces adult smoking prevalence by between one and 2.5 percent. The relationship between cigarette prices and adult smoking prevalence is illustrated in Figure Four. As with cigarette consumption, the downward trend in adult prevalence was halted in the mid-1990s following the Marlboro Friday price cuts and was resumed later in the decade as taxes and prices rose. More recently, as cigarette prices have held steady, the downward trend in prevalence has flattened out.

Given that nearly all smoking initiation occurs during adolescence (USDHHS, 1994), changes in adult prevalence result from increased cessation among adult smokers. Early studies of the relationship between cigarette prices and smoking cessation based on retrospective, cross-sectional data found that higher prices reduced the duration of smoking and increased the likelihood of quitting (Douglas and Hariharan, 1994; Douglas, 1998). More recent studies based on longitudinal data that directly assesses cessation behavior conclude that higher cigarette prices increase the likelihood that a smoker will try to quit smoking. Tauras and Chaloupka (2001), for example, estimate that a ten percent increase in cigarette prices raises the probability of a quit attempt among young adult smokers by between six and nine percent. In a subsequent study that accounted for unsuccessful quit attempts, Tauras (2004) estimates that a ten percent price increase increases the likelihood of a successful quit attempt by about 3.5 percent. Figure Five illustrates the simple association between cigarette prices and cessation; consistent with the findings from more rigorous empirical studies, there is a higher percentage of former smokers in states with higher cigarettes prices.

[Figure Five about here]

Recent research on the demand for cessation pharmacotherapies produces consistent findings. Tauras and his colleagues (2003, 2005), for example, find that higher cigarette prices increase sales of nicotine replacement products.

Taxes, Prices and Youth and Young Adult Tobacco Use

Economic theory suggests several reasons for prices having a greater impact on youth smoking than on adult smoking (Chaloupka, 2003; Chaloupka, et al., 2000). These include:

- the lower disposable income of the typical youth, implying that changes in the prices of any of the products they consume will have a greater impact on consumption of these products;
- the greater importance of peer behavior among youth, implying that price-induced changes in the smoking behavior of some youth will lead to changes in the smoking behavior of other youth;
- the shorter smoking histories of younger smokers, suggesting that they may be less addicted and able to respond more quickly to changes in prices;
- the greater relative importance to youth of short term costs (e.g. monetary prices) versus long term costs (e.g. health consequences), given their greater propensity to discount the future; and
- other channels through which price indirectly influences youth smoking (e.g. through parental smoking).

Early research on youth smoking based on cross-sectional survey data confirmed these predictions. In the first studies of the impact of price on youth, young adult, and adult smoking, Lewit and his colleagues (1981, 1982), found that smoking among teens was about three times

more responsive to price than was smoking among adults, with young adults about twice as responsive as older adults. While some studies do not find differences in the effects of price on smoking among different age groups (e.g. Wasserman, et al., 1991), most studies have confirmed that price has a greater impact on smoking among younger person than on smoking among older persons. For example, Harris and Chan (1999) estimated that a ten percent price increase would reduce smoking by about ten percent among 15 through 17 year olds, almost eight percent among 18 through 20 year olds, between six and seven percent among 21 through 26 year olds, and just over three percent among 27 through 29 year olds. Similarly, a small number of studies have examined the impact of smokeless tobacco taxes on youth smokeless tobacco use, concluding that higher taxes are effective in reducing the prevalence and frequency of youth use of these products (e.g. Chaloupka, Tauras and Grossman, 1997; Tauras, et al., 2007).

The relationship between cigarette prices and youth smoking are illustrated in Figures Six and Seven showing cigarette prices and youth smoking rates over time and across states, respectively. As with cigarette sales and adult prevalence, youth smoking is higher when prices are lower and lower when prices are higher. The rise in youth smoking in the mid-1990s, is in part explained by the Marlboro Friday price cuts of 1993; Gruber and Zinman (2001), for example, estimate that over one-quarter of the increase was caused by the reductions in prices for Marlboro and other leading brands.

[Figure Six about here]

[Figure Seven about here]

A few recent studies have explored the direct and indirect influences of price on youth smoking that are suggested by economic theory (Chaloupka, 2003). For example, Powell and her colleagues (2005) find that more than one-third of the overall impact of price on youth

smoking is the result of the indirect effects of price on peer smoking. That is, as some youth are deterred from smoking by higher prices, other youth are less likely to smoke because fewer of their peers smoke. Similarly, Powell and Chaloupka (2005) find that about one-fifth of the overall impact of price on youth smoking is accounted for by the effects of price on parental smoking.

More recent research has focused on the role of cigarette prices in the youth smoking uptake process. The Surgeon General (USDHHS, 1994) describes uptake as moving through several stages, including experimentation, regular smoking, and addiction. A few recent studies using cross-sectional data find that prices have relatively little impact on the early stages of smoking uptake, but have a much greater impact on moving from experimentation into regular smoking and, eventually, addiction (e.g. Gruber and Zinman, 2001; Liang and Chaloupka (2002), Emery et al. 2001, Ross, et al., 2006). This is consistent with the observation that most youth at early stages of smoking uptake smoke few cigarettes and typically get their cigarettes from social sources, while those smoking more regularly are more likely to buy their own cigarettes and, as a result, be more directly influenced by price.

This finding is generally confirmed by studies using longitudinal data on youth (for an exception, see DeCicca, et al., 2002). For example, Tauras and his colleagues (2001) use the Monitoring the Future longitudinal data on youth smoking, with baseline data collected from eighth and tenth graders in the early 1990s to examine the impact of cigarette price on smoking initiation. These data are ideal given the multiple cohorts (six) they include and the many changes in cigarette prices (up and down) in the 1990s. Tauras and his colleagues estimate that a ten percent price increase reduces the probability of any smoking initiation (including experimentation) by one to three percent, but that this price increase reduces the probabilities of

initiating daily smoking and heavy daily smoking (half pack or more per day) by eight to 12 percent and ten to 14 percent, respectively. Tauras (2005) finds similar effects in his more recent research on the effects of price on smoking escalation among young adults, concluding that higher cigarette taxes and prices are most effective in keeping young adults from moving from less than daily smoking into daily and heavy daily smoking.

Differences in the Effects of Taxes and Prices by Socioeconomic Status

Economic theory predicts that the effects of price on consumption will be larger among lower income consumers than among higher income consumers, all else the same. A few studies have examined differences in price responsiveness based on differences in income and related characteristics (e.g. education and socioeconomic class), generally concluding that smoking among persons in lower socioeconomic groups will respond more to changes in cigarette prices than will smoking among those in higher socioeconomic groups. Farrelly and his colleagues (2001), for example, estimate that smoking among persons in US households below the median income level was about four times more responsive to changes in cigarette prices than was smoking among those in higher income households. Similarly, Chaloupka (1991) found that smoking among less educated persons was more sensitive to price than was smoking among more educated persons, while Townsend and her colleagues (1994) found that smoking among persons in the lowest socioeconomic classes in the UK was highly responsive to price, while smoking among those in the highest socioeconomic classes was much less affected by price. Emerging evidence from low and middle-income countries produces similar findings, with smoking in the lowest income countries more influenced by price than smoking in higher income countries (Ross and Chaloupka, 2006).

Taxes, Prices, and the Health Consequences of Smoking

A few studies have examined the impact of cigarette taxes and prices on some of the health consequences of smoking. In the earliest of these, Moore (1996) used annual state-level data on death rates from diseases caused by smoking (e.g. lung and other cancers, heart disease and other cardiovascular disease) and concluded that higher cigarette taxes would lead to significant reductions in the premature deaths caused by smoking. He estimated that a ten percent increase in cigarette taxes would reduce smoking-attributable deaths by over 5,000 each year. Given the significant health consequences of smoking during pregnancy, several researchers have focused on the effects of price on smoking among pregnant women and the resulting impact on birth outcomes. These studies generally find that smoking by pregnant women is highly sensitive to price, attributing this to the fact that many pregnant smokers are already motivated to quit by their pregnancy and price increases provide further motivation. Ringel and Evans (2001), for example, estimate that a ten percent increase in cigarette prices reduces the prevalence of smoking among pregnant women by seven percent, while Colman and his colleagues (2003) estimate that this price increase raises the probability of quitting during pregnancy by ten percent. Evans and Ringel (1999) use their estimates of the impact of price on smoking among pregnant women and the evidence on the effects of price on birth outcomes to predict that a \$1.10 federal tax increase proposed in the late 1990s would have reduced the probability of a low birth-weight birth by approximately five percent.

Earmarked Tobacco Taxes and Other Tobacco Control Program Funding

As noted above, several state have increased cigarette and other tobacco product taxes at least in part because of the public health benefits of the reduced tobacco use that results from them. Beginning with California, many went further by earmarking some of the revenues generated from these taxes to fund comprehensive tobacco control programs. More recently, a

number of states have allocated some of the payments they receive from tobacco companies under the MSA or other settlements to fund tobacco control efforts.

In addition to state funding for tobacco control, a variety of national programs that provide funding to states have been implemented since the early 1990s. These include: coalition-based efforts such as the National Cancer Institute's American Stop Smoking Intervention Study (ASSIST) that funded 17 states from 1993 to 1999 and the Robert Wood Johnson Foundation's SmokeLess States program which funded nearly all states at some point between 1994 and 2005; state health-department based programs such as the CDC's Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT) program that funded the non-ASSIST states (except for California) in the 1990s in its successor, the National Tobacco Control Program that has funded all states since the end of the ASSIST and IMPACT programs; and other efforts funded by the Substance Abuse and Mental Health Services Foundation, the American Legacy Foundation, and others.

Based largely on the experiences in the first few states to fund comprehensive programs, CDC developed its *Best Practices for Comprehensive Tobacco Control Programs* in 1999. These programs support a variety of activities, including community and school-based prevention and cessation programs, counter-marketing campaigns, Quitlines and other cessation support, efforts to enforce state and local tobacco control policies, and surveillance and evaluation. More details on some of the key activities included in these programs and the impact of these activities on tobacco use and its consequences are provided in other chapters contained in this volume. In addition to outlining the key components of a comprehensive program, CDC provided estimates of the funding levels needed to support a comprehensive program (lower and upper estimates) for all states.

As with state tobacco taxes, there is considerable variation both across states and within states over time in the level of funding that has been provided for these programs (American Heart Association, et al., 2006). This is illustrated in Figure Eight which shows the level of state funding relative to CDC's 1999 estimate of the minimum needed for a comprehensive program in each state. While a few states have sustained funding for several years at or close to the CDC's minimum estimated level, most states have fallen well short. Even in states where these programs have been demonstrated to reduce tobacco use and its consequences (e.g. Florida and Massachusetts), funding has been cut sharply in response to budgetary pressures. Figure Nine illustrates the trend in recent state allocations to comprehensive tobacco control programs relative to the minimum estimates developed by CDC, adjusted over time for inflation and population growth. As seen in the figure, funding peaked at about 42 percent of the CDC minimum in state fiscal years 2001 and 2002, but fell to just over half that level by fiscal year 2006.

[Figure Nine about here]

A few recent studies assess the impact of state funding for tobacco control efforts on youth and adult smoking behavior. Farrelly and his colleagues (2003) find that increased funding for these programs is effective in reducing overall cigarette consumption and estimate that if states, starting in 1994, had funded at the minimum levels recommended by CDC, the rate of decline in cigarette consumption from 1994 through 2000 would have been doubled. Tauras and his colleagues (2005) reach similar conclusions for youth smoking prevalence. They find that youth smoking prevalence is significantly lower in states that provide more funding for comprehensive tobacco control programs, and estimate that youth prevalence would have been

between 3.3 and 13.5 percent lower in the 1990s had states funded programs at the CDC recommended minimum during this period.

III. Smoke-Free Air Policies

State and local governments have restricted smoking in a variety of places for a number of years. The earliest of these policies typically limited smoking in limited venues (e.g. theaters or food preparation areas) and were intended to prevent fires or food contamination. As evidence emerged about the health consequences of smoking, including limited evidence on the consequences of exposure of non-smokers to tobacco smoke first reported by the Surgeon General in his 1972 report (US Department of Health, Education, and Welfare (USDHEW), 1972), new policies were adopted with the intent of protecting non-smokers. The earliest of these state policies was the 1973 law in Arizona which limited smoking in a number of places. In 1974, Connecticut became the first state to restrict smoking in restaurants, while Minnesota, in 1975, became the first to do so in private worksites. In 1977, Berkeley California adopted the first local restrictions on smoking in restaurants and other public places. Over the next few years, a growing number of state and local governments adopted increasingly strong restrictions.

Given the success of Berkeley's local ordinance and the adoption of comparable ordinances in other California communities, legislative efforts were undertaken and ballot initiatives proposed that would enact statewide restrictions on smoking. Somewhat surprisingly, given that it has been at the forefront of other tobacco control efforts (e.g. higher taxes and funding for comprehensive tobacco control programs), California voters twice rejected ballot initiatives (for Proposition 5 in 1978 and for Proposition 10 in 1980) and the legislature rejected similar measures. The failure at the state level led to increased momentum for strong local

policies, resulting in the adoption of ordinances restricting smoking in San Francisco, Los Angeles, Sacramento, San Diego and many other California communities in the early 1980s.

The success at the local level in California and the lack of action (or adoption of relatively weak policies) at the state level led to similar local efforts across the United States. These “grassroots” efforts were supported by a variety of organizations, including Americans for Nonsmokers’ Rights, the Group Against Smoking Pollution, the American Lung Association, the American Heart Association, and the American Cancer Society. Efforts to mobilize support for local ordinances included intensive public education efforts and the ordinances that resulted typically went as far in restricting smoking as public sentiment allowed (USDHHS, 2006). In some states, the spread of local ordinances led to the enactment of state policies limiting smoking; in some states, however, these state policies included provisions pre-empting communities from adoption ordinances that imposed more extensive restrictions than contained in the state policy.

Momentum for these policies increased significantly with the release of the 1986 Surgeon General’s report *The Health Consequences of Involuntary Smoking*, which concluded that exposure to tobacco smoke caused diseases, including lung cancer, and that children of smoking parents were at increased risk of respiratory diseases (USDHHS, 1986). In addition, the report found that simple separation of smokers and nonsmokers might reduce, but did not eliminate, the risks from exposure. This report prompted new federal regulations banning smoking on domestic flights of two hours or less and, eventually, virtually all domestic flights (in 1990) and on all international flights departing from or arriving in the US (in 2000). Similarly, it spurred state and local government to strengthen existing policies and to adopt new policies, including

complete bans on smoking in some venues (e.g. health care facilities). In addition, it led numerous private companies to adopt policies governing smoking in their workplaces.

As evidence grew about the health consequences of exposure to tobacco smoke, state and local policies became stronger and stronger. The 1997 release of the California Environmental Protection Agency's report on the health consequences of exposure (California EPA, 1997) was followed in 1998 by California's law banning smoking in bars without separately ventilated smoking areas. In 2002, New York City made history by banning smoking in bars, restaurants, and virtually all other workplaces beginning in July 2003, while Florida voters overwhelmingly supported a ballot initiative that, with some exceptions (most notably bars), did the same. By 2003, every state and thousands of localities had adopted policies limiting or banning smoking in a variety of locales. The growth in and strengthening of these state policies is illustrated in Figure Ten.

[Figure Ten about here]

Most recently, the 2006 Surgeon General's report *The Health Consequences of Involuntary Exposure to Tobacco Smoke* (USDHHS, 2006) stimulated further action, leading a growing number of states and communities to adopt comprehensive bans on cigarette smoking in virtually all public places and private worksites, as well as some outdoor spaces (e.g. sports stadiums and public parks). As of mid-2007, 23 states, Washington DC, and hundreds of communities have adopted comprehensive smoke-free air policies banning smoking in some combination of restaurants, bars, and/or private worksites, while similar measures are pending in a number of other jurisdictions (American Nonsmokers' Rights Foundation (ANRF), 2007). The growth in these comprehensive policies since 1990 is illustrated in Figure Eleven.

[Figure 11 about here]

These comprehensive state policies (including those scheduled to take effect in the future), along with comparable local policies, currently apply to well over half of the US population. Further limits on smoking are being considered, including extending the policies to a wide variety of outdoor spaces and prohibiting smoking in private cars when children are present. In addition, as awareness of the health consequences of exposure to tobacco smoke grew and as public and private policies were implemented and strengthened, a growing number of households, including those of smokers, have adopted rules governing smoking in the home. By 2002, about two-thirds of US households had smoke-free home rules in place (USDHHS, 2006).

In general, research suggests that these policies are self-enforcing and that compliance is high within a short time after their implementation (e.g. Jacobson and Wasserman, 1997, 1999; Borland, et al., 2006). As a result, these policies are highly effective in reducing non-smokers' exposure to tobacco smoke (Task Force on Community Preventive Services, 2001, 2005; USDHHS, 2006). Somewhat surprisingly perhaps, most smokers residing in communities where smoking is banned in restaurants indicate that they support such bans (Borland, et al., 2006). For example, in one recent survey, 83 percent of Irish smokers indicated that the comprehensive smoking ban implemented in Ireland in March 2004 was a good or very good policy (Fong, et al., 2006).

In addition to protecting non-smokers from exposure to tobacco smoke, these policies are effective in reducing cigarette smoking, both by encouraging adult smokers to quit smoking and preventing youth from initiating smoking. These reductions result, in part, from the strengthening of social norms against smoking that follows the adoption of these policies, as well as from limiting opportunities for smoking and raising the "costs" of smoking (e.g. the inconvenience of or discomfort associated with smoking outdoors). Comprehensive reviews of

the research evidence on the impact of smoke-free workplace policies by the National Cancer Institute (2000), the Task Force on Community Preventive Services (2001, 2005) and the Surgeon General (USDHHS, 2006) find that these policies are effective in inducing some smokers to quit smoking and in reducing the number of cigarettes consumed by some smokers who continue to smoke.

Likewise, among youth and young adults, these policies are associated with stronger perceptions of the risks from smoking and lower perceived smoking prevalence among adults. These factors and the increased “costs” of smoking associated with the policies help explain the consistent findings from a growing number of studies showing that comprehensive smoke-free air policies are effective in reducing youth smoking prevalence, initiation, and uptake (Task Force on Community Preventive Services, 2005; USDHHS, 2006).

The associations between state smoke-free air policies and adult and youth smoking prevalence are illustrated in Figures Twelve and Thirteen, respectively. While these simple graphs do not control for the other factors that affect smoking prevalence, or for the potential reverse causality between prevalence and state policies, they are consistent with the extensive and growing body of research that does take these into account. Both figures use an index developed by the ImpacTeen project reflecting the number of places covered by state smoke-free air policies and the extent of the restrictions on these places (ranging from no restrictions to a complete ban).

[Figure Twelve about here]

[Figure Thirteen about here]

IV. Policies Limiting Youth Access to Tobacco Products

State and local policies aggressively targeting youth access to tobacco are a relatively recent phenomenon. While some policies had been in place since the late 19th century, and most states had such policies by 1990, compliance with these policies was quite low. A widely cited 1990 report by the Office of the Inspector General found that while 44 states prohibited the sale of cigarettes to minors, there was almost no enforcement of these policies and, as a result, minors could easily purchase cigarettes. In response to this report and some evidence on the effectiveness of strong, well-enforced and highly complied with local policies (e.g. Jason, et al., 1991), as well as the success of the 1984 federal policy requiring states to raise the minimum legal purchase age for alcoholic beverages to 21 years, the 1992 federal Synar amendment was adopted, requiring that states adopt policies addressing the sale of tobacco products to minors (persons under 18 years of age) and that they demonstrate compliance with these policies. The compliance standards that were eventually set by regulation were not overly restrictive, requiring states to conduct periodic compliance checks and to show that fewer than 20 percent of tobacco retailers violated the state policies. States that failed to meet this standard would lose a portion of their federal block grant funding.

In response to the Synar amendment, states adopted a variety of new policies and strengthened existing policies governing youth access to tobacco products. The growth over time in these policies is illustrated in Figure Fourteen. The “score” in this figure reflects the average of state scores for their policies governing youth access to tobacco products, accounting for state pre-emption of stronger local policies, with higher scores reflecting more comprehensive policies (as described in Alciati, et al., 1998). Unlike the smoke-free air policies discussed above, compliance with these policies required substantial enforcement efforts (Jacobson and Wasserman, 1997).

[Figure Fourteen about here]

A similar emphasis on limiting the sale of tobacco products to youth was included in the 1996 Food and Drug Administration's (FDA) *Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents*. The FDA rules called for aggressive enforcement of underage sales policies, requiring vendors to check photo identification from anyone under 27 years of age. With funding from FDA, a national compliance check program was implemented. However, this came to an end when the US Supreme Court ruled in 2000 that the FDA did not have the authority to regulate tobacco products or their sale.

As a result of these efforts, non-compliance among tobacco product vendors fell over time. By 2005, nearly all states met the standard set by the Synar amendment; only Kansas (38 percent violation rate) and the District of Columbia (20.5 percent violation rate) were below this threshold and the median non-compliance rate was 11.5 percent (Substance Abuse and Mental Health Services Administration (SAMHSA), 2006b).

The focus on tobacco product vendors prompted some backlash among retailers who felt unfairly singled out and pushed for policies that would hold youth accountable for attempting to purchase tobacco products (Lantz, et al., 2000). Despite opposition to these policies from many in the tobacco control community, many state and local governments adopted policies that targeted the purchase, possession, and/or use of tobacco products by minors (Wakefield and Giovino, 2003). By 2005, 45 states had adopted policies targeting at least one of the three "PPU" laws, with over one-third of states adopting all three. The growth in these policies at the state level is illustrated in Figure Fifteen.

[Figure Fifteen]

Despite the emphasis over the past decade on policies targeting minors' access to and/or possession and use of tobacco products, and on the enforcement of at least some of these policies, the evidence on their impact on youth tobacco use is mixed, at best (Task Force on Community Preventive Services, 2005; Levy, et al., 2004; Rigotti, 2001). In general, there is consistent evidence that policies targeting the sale of tobacco products to minors and their enforcement are effective in raising retailer compliance. However, the same is not the case for studies that look at the impact of these policies, and the enforcement of and compliance with these policies, on youth smoking. Some studies find that higher compliance rates are effective in reducing youth smoking (e.g. Ross, et al., 2006), while others find that there is no impact of the policies or their implementation on youth smoking behavior (e.g. Rigotti, et al., 1997).

As many have observed, even relatively high compliance rates imply that many retailers are non-compliant and remain a source of tobacco products for minors. Given recent compliance rates, for example, Chaloupka and his colleagues (in press) estimate that 24,000 tobacco retailers still sell to minors. In addition, as compliance rates have increased, youth have increasingly turned to other sources for cigarettes, including older friends and siblings, parents, and strangers (Fichtenberg and Glantz, 2002). Given this mixed evidence, it is not surprising that there appears to be little association between these policies and youth smoking prevalence, as illustrated in Figure Sixteen. This figure shows the simple associations between the index reflecting the state policies governing minors' access to tobacco products described above and state-level estimates of youth smoking prevalence.

[Figure Sixteen about here]

In contrast to the number of studies that have been done on the impact of the sales to minors policies, there have been virtually no published studies on the effects of the policies

targeting minors' purchase, possession and/or use, nor is there any evidence that these policies are being actively enforced (Wakefield and Giovino, 2003). Given this absence of evidence, Wakefield and Giovino (2003) provide several reasons for why these policies are unlikely to have a significant impact on youth smoking prevalence, including the difficulty of detecting violations, the diversion of attention from effective policies, and the reinforcing of the notion that tobacco use is an adult behavior. Figure Seventeen, which illustrates the simple association between the number of PPU policies at the state level and state-level youth smoking prevalence is consistent with these arguments. As seen in this figure, there appears to be no impact of these policies on youth smoking. Clearly, however, more rigorous research is needed to demonstrate what, if any, effects these policies have on youth smoking initiation and uptake.

[Figure Seventeen]

V. Policies Limiting Tobacco Company Marketing

In contrast to the considerable activity at the state and local levels over the past two decades on the policies discussed above, there have been relatively few efforts to limit tobacco company marketing activities, with most of these at the federal level. As described elsewhere in this volume, there is growing evidence that tobacco company marketing activities influence youth smoking initiation and uptake and can deter cessation among adult smokers. Efforts to regulate these marketing activities are constrained by the constitutional protection of free speech, although court decisions have made it clear that commercial speech is not as protected as other forms of speech (Slade, 2001).

At the federal level, the most significant constraint on tobacco industry marketing is the ban on cigarette advertising on television and radio, implemented in 1971 as a result of the Public Health Cigarette Smoking Act of 1969, and eventual extensions banning broadcast

advertising of other tobacco products. The FDA rules discussed above included a number of additional restrictions on outdoor and magazine advertising and distribution of tobacco company branded promotional items, but these provisions were never implemented given the Supreme Court's decision that FDA did not have regulatory authority over tobacco products.

State and local governments have adopted relatively few limits on tobacco company marketing practices. Of those that have been implemented, most address the placement or location of advertising (e.g. within a specified distance of schools or on public transit), while others address the placement of tobacco products within retail outlets (e.g. prohibiting self-service displays). Efforts to go further have been unsuccessful; for example, in 2001 the US Supreme Court struck down Massachusetts' policy which had effectively banned most outdoor advertising as a violation of the First Amendment.

The Master Settlement Agreement between the states and leading cigarette companies, however, did result in a variety of new restrictions on tobacco industry marketing that have been implemented in recent years. These include: a ban on billboard, transit, and most other outdoor advertising; limits on tobacco company brand name sponsorships; prohibition of the use of cartoon characters in advertising and on packaging; a ban on the distribution of branded merchandise; restrictions on sponsorship; targeting of minors; and more.

Despite the restrictions on marketing, cigarette company marketing expenditures have increased rapidly over the past decade, continuing an upward trend that began in the mid-1970s. Figure Eighteen illustrates the growth in inflation adjusted cigarette marketing expenditures per pack from 1975 through 2003, using the data reported annually by the Federal Trade Commission (FTC, 2005). This figure groups marketing expenditures into two basic categories – image-oriented (including print, outdoor, point-of-sale, sponsorships, and other image-related

advertising expenditures) and price-related (including coupons, promotional allowances, retail value added promotions, and other price-related promotional spending).

[Figure Eighteen about here]

As is clear from the figure, the restrictions on marketing contained in the MSA have done little to slow the growth of cigarette marketing. Per pack marketing expenditures adjusted for inflation more than doubled in the years immediately following the MSA. Researchers have shown that the MSA restrictions on various marketing activities led to increases in other marketing efforts. For example, Wakefield and her colleagues (2002) show that advertising and promotion at the point-of-sale increased sharply after the 1999 implementation of the MSA's ban on billboard advertising, while Pierce and Gilpin (2004) and Loomis and his colleagues (2006) document the significant rise in spending on retail value added promotions (e.g. buy-one-get-one-free promotions and gifts with cigarette purchases) and other price-related marketing following the MSA.

As illustrated in Figure Eighteen, increases in price-related marketing account for the growth in overall cigarette company marketing expenditures in recent years. This continues a trend that began in the early/mid-1980s; over time, the relative importance of image-oriented advertising in overall cigarette company marketing has gone down, while that of more price-oriented marketing has risen sharply. This shift in emphasis coincides with the early economic research on the effects of cigarette price on youth, young adult, and adult smoking discussed above (Chaloupka, 2004).

There is growing evidence that at least some of the tobacco company marketing activities reflect efforts to offset the impact of state and local tobacco control policies. Keeler and his colleagues, for example, find that cigarette companies price discriminate by state; that is, they

charge lower prices in states with stronger state and local tobacco control policies than in other states, all else constant. Similarly, Slater and her colleagues (2001) find that the use of point-of-sale promotions is greater in states with comprehensive tobacco control program funding, while Loomis and his colleagues observe more of these promotions in following the MSA as well as in response to state cigarette tax increases. Chaloupka and his colleagues (2002) provide evidence from internal tobacco company documents that confirms the increased use of various marketing strategies in order to dampen the effects of state cigarette tax increases.

These findings help explain the mixed results obtained from studies that have examined the impact of marketing restrictions on cigarette smoking. Early research on the effects of the broadcast advertising ban, for example, generally concluded that the net impact of the ban was to increase cigarette consumption since the effective anti-smoking ads that were being broadcast under the Federal Communication Commission's Fairness Doctrine in the years leading up to the ban were virtually eliminated as well (e.g. Schneider, et al., 1981). More recently, Keeler and his colleagues (2004) estimate that the increases in cigarette company marketing expenditures following the marketing restrictions and price increases resulting from the MSA offset as much as 57 percent of the decline in smoking caused by the MSA-induced price increases. Likewise, Pierce and his colleagues (2005) find that the increased use of price-reducing promotions partially offsets the impact of cigarette tax and price increases on youth smoking initiation.

Saffer (2000) nicely describes why these types of partial restrictions on cigarette company marketing are unlikely to be effective in reducing smoking, noting that bans on a few marketing activities will have little impact as cigarette companies shift spending from the banned activities to other marketing efforts. Saffer goes on to argue that marketing restrictions need to be comprehensive before they will produce significant declines in smoking. Saffer and

Chaloupka's (2000) analysis of advertising bans in OECD countries is consistent with this argument. They find that limited advertising bans – those that ban some types of advertising, but not others – have little or no impact on cigarette smoking, but estimate that comprehensive advertising bans can reduce overall cigarette consumption by as much as eight percent.

VI. Opposition to Tobacco Control Policies

Over the past few decades, the growing evidence on the health consequences of smoking and exposure to tobacco smoke, the addictive properties of nicotine, the extent of smoking uptake among youth, and the effectiveness of tobacco control policies has changed the focus of the debate over these policies. Tobacco companies and other opponents of these policies can no longer convincingly argue that cigarette smoking does not cause disease, that non-smokers are not harmed by exposure to tobacco smoke, or that these policies are ineffective in reducing smoking. Most arguments used in opposition to tobacco control policies in recent years have instead focused on the economic impact of these policies, including their effects on government revenues, businesses, and the poor, as well as their role in creating a black market in tobacco products. As with the earlier arguments that raised confusion about the effects of smoking on health, the arguments about the adverse economic impact of tobacco control policies are misleading, overstated, or false (Jha and Chaloupka, 1999, 2000; Warner, 2000). This section briefly reviews these arguments and the evidence on them.

Impact of Tobacco Control Policies on Revenues

One frequently made claim is that higher cigarette taxes and other tobacco control policies will lead to sharp reductions in governments' tobacco-related revenues (e.g. those from tobacco excise taxes and settlement payments). While there is some truth to this argument in the long run, it is clear that an increase in tobacco taxes will increase revenues in the short to

medium term, even when combined with other policies aimed at reducing tobacco use. As tobacco use falls over time, revenues will gradually decline, but it will be many years before they fall below their pre-tax-increase level.

With respect to the effects of cigarette tax increases on revenues, the relatively low share of cigarette taxes in cigarette prices (state taxes account for about one-fourth of price in recent years, on average) and the less than proportionate reduction in sales in response to a price increase (recall the estimates discussed above that consumption falls between 2.5 and five percent in response to a ten percent price increase) implies that a cigarette tax increase will lead to an increase in cigarette tax revenues. Farrelly and his colleagues (2003) confirmed this in their analysis of state cigarette tax increases in the 1990s. They found that every state increase in cigarette taxes of ten cents or more per pack resulted in increased revenues, despite the reductions in cigarette sales caused by the tax increase. The positive relationship between cigarette taxes and cigarette tax revenues is illustrated in Figure Nineteen which shows the inflation adjusted, average combined state and federal tax and tax revenues from 1975 through 2005.

[Figure Nineteen about here]

Over time, inflation will erode the value of the cigarette tax and related revenues, unless the tax is increased often enough to keep pace with inflation. Similarly, as cigarette smoking declines in response to other tobacco control efforts, revenues from the tax will also decline, unless the tax is increased periodically. Nevertheless, tax revenues will remain higher many years after a significant tax increase than they were before, even in the wake of a considerable decline in smoking. California may be the best example of this, given its tax increases in 1989 (from 10 to 35 cents), 1994 (from 35 to 37 cents), and 1999 (from 37 to 87 cents), its sustained

comprehensive tobacco control program funded by earmarked revenues from the 1989 tax increase, and its increasingly comprehensive smoke-free air policies. In the last full fiscal year before the 1989 tax increase, California's gross cigarette tax revenues were just over one-quarter of a billion dollars (\$251.6 million); in the most recent fiscal year (FY06), California's gross cigarette tax revenues were over one billion dollars (\$1.03). The four-fold increase in revenues occurred despite tax paid cigarette sales falling by more than half.

Impact of Tobacco Control Policies on Business

A second argument commonly used in opposition to stronger tobacco control policies is that these policies will reduce business activity and cause significant job losses. This argument is based on the notion that some involvement of a business with tobacco implies a dependence on tobacco (e.g. that retailers that sell tobacco products or advertising agencies that develop marketing campaigns are financially dependent on the continued use of these products). The reality is that very few tobacco-related jobs are actually dependent on tobacco (most notably tobacco growing and tobacco product manufacturing) and that the economic contribution from tobacco-dependent activities is very small, declining, and concentrated in a few states (Warner, 2000; Liang, et al., 2006).

While significant declines in tobacco use that result from higher taxes, stronger smoke-free air policies, and comprehensive tobacco control program efforts would lead to reductions in employment in and the economic contribution of the tobacco-dependent sectors of the economy, these losses would be more than offset by increased economic activity and employment in other sectors as the money once spent on tobacco is now spent on other goods and services. Warner and Fulton (1994) were the first to carefully study this issue in their analysis of the implications of declining tobacco use on the Michigan economy, a non-tobacco state. Using a sophisticated

macroeconomic simulation model, they looked at the employment and income effects of more rapid reductions in tobacco use in Michigan, assuming that the money no longer spent on tobacco products was spent on other goods and services following the existing consumer spending patterns in Michigan. Their estimates clearly showed that more rapid reductions in tobacco use in Michigan would have a net positive impact on the state's economy – increasing employment and raising incomes - as the money once spent on tobacco products was spent instead on goods and services more likely to be produced in Michigan. In a follow up study that used the same approach to look at the impact on the regional economies of the US, Warner and his colleagues (1996) found the same was true for every region but the tobacco growing/manufacturing region, where there would be modest job losses in response to an acceleration of the downward trend in tobacco use. Under a variety of scenarios, the net effect nationally was an overall increase in jobs.

A more narrowly focused version of this argument has been used in opposition to comprehensive smoke-free air policies. Opponents of these policies argue that bans on smoking in restaurants, bars, and other venues will lead smoking patrons to avoid these establishments or frequent them less often. Consequently, they argue, there will be reductions in business activity and employment, and some businesses will be forced to close in the sectors affected by the smoke-free policies. Over the past ten-plus years, there have been numerous studies that have looked at this issue, using data on sales tax revenues, employment, and/or business openings and closings in relevant sectors. The best of these studies include data before and after policies are implemented in communities, as well as from comparable communities that have not adopted similar policies. These studies consistently show that there is no negative economic impact, and often a small positive effect, of strong local smoke-free air policies on the businesses affected by

the policies (see Scollo, et al. (2003) and the 2006 Surgeon General's report (USDHHS, 2006) for comprehensive reviews of these studies). Proponents of this argument fail to account for the increased patronage of non-smokers that follows comprehensive smoke-free air policies and greatly overstate any declines from reduced patronage by smokers.

Impact of Tobacco Control Policies on the Poor

The argument that increased tobacco taxes will adversely impact on the poor frequently used in opposition to proposed tax increases and is based on the clear evidence that existing tobacco taxes are regressive (i.e. that those on lower incomes bear a disproportionate share of the tobacco tax burden) (USDHHS, 2000). The regressivity of existing tobacco taxes results, in part, from the greater concentration of smoking among the lowest income populations, one result of which is that these populations also bear a disproportionate share of the burden of disease caused by tobacco (Boback, et al., 2000; Murray, et al., 2006).

The regressivity of existing taxes, however, does not necessarily imply that tax increases are regressive as well. As discussed above, smoking among the lowest income/SES populations is most responsive to price, while smoking among the highest income/SES populations is least responsive (e.g. Farrelly, et al., 2001). Thus, a tax increase that raises cigarette prices will lead to the largest declines in smoking among the lowest income persons, and the burden of tax increase will fall more heavily on higher income consumers whose smoking behavior changes little in response to the tax increase.

It is true, however, that low income smokers who continue to smoke following a tax increase will be adversely affected. To the extent that the new revenues generated by tobacco tax increases are allocated to programs targeting the poor, including tobacco control programs, this concern is at least partially alleviated. For example, several states have earmarked new

tobacco tax revenues for programs that provide cessation products and counseling to low income smokers interested in quitting, while many focus on reducing income-related and other disparities in tobacco use and its consequences. Still others have dedicated new tobacco tax revenues to expansions of Medicaid and other public health programs or used these revenues to avoid cuts in these programs.

Tobacco Taxation and Black Markets

A final argument used in opposition to increased tobacco taxes is that the higher taxes will stimulate significant tax avoidance among smokers and create a black market in tobacco products, resulting in lost tax revenues and fewer public health benefits. While it is true that higher taxes do create greater incentives for tax avoidance and evasion, the extent of the problem has been significantly overstated. In a recent survey of US smokers, about six percent reported making their last cigarette purchase from a lower-tax or untaxed source, including stores on Native American reservations or military bases, Internet and other direct vendors, lower tax jurisdictions, duty free establishments, or street vendors (Hyland, et al., 2006). Others estimate that tax avoidance and evasion accounted for about one-eighth of total cigarette consumption in the early 2000s (Stehr, 2005). Even at these levels, increases in tobacco taxes are effective in reducing cigarette smoking, improving public health, and generating new revenues (Merriman, et al., 2000; Farrelly, et al., 2003).

Moreover, states have employed a variety of strategies in recent years that directly address tax avoidance and evasion and appear to be making progress in reducing the extent of these activities (Chaloupka, et al., in press). Led by Washington State, a growing number of states have used the federal Jenkins Act to obtain customer lists from Internet cigarette vendors, following up with efforts to collect taxes due from state residents buying from these vendors.

Many have adopted legislation that targets Internet and other direct sales, ranging from a complete ban on direct sales to state residents (in New York) to policies that prohibit delivery services from delivering tobacco products from vendors that are not licensed in the state or that are not in compliance with state policies governing direct shipments (in Maine). State Attorneys General have negotiated agreements with major shipping companies (including Federal Express, United Parcel Service, and DHL) that keep them from delivering tobacco products direct to US residents, as well as with major credit card companies and other services (including Visa, MasterCard, Discover, American Express and PayPal) that prohibit their use in buying cigarettes on-line. Similarly, many states have implemented policies that greatly reduce or eliminate the differentials between prices on and off Native American reservations. Some, for example, have negotiated compacts with tribes that impose “tribal taxes” equivalent to state taxes, with most or all of the resulting revenues remaining with the tribe. In an effort to address large scale cigarette smuggling, California adopted a new, high-tech, difficult to counterfeit tax stamp that could be quickly scanned by enforcement agents to determine whether or not taxes had been paid. Coupled with more aggressive enforcement, early experiences suggest that the new stamps have been quite effective in generating new revenue and curbing smuggling (Halper, 2005).

VII. Conclusions

Over the past few decades, many lessons have been learned about the effectiveness of various tobacco control policies in reducing tobacco use. The increased use of cigarette and other tobacco product taxes as a tobacco control tool at the federal, state, and local level, the increasing stringency and comprehensiveness of state and local policies limiting smoking in public places and private worksites, and greater funding for comprehensive tobacco control programs have proven to be highly effective in reducing tobacco use and its consequences.

Other policies, such as those targeting youth and limiting some tobacco company marketing efforts, have had less of an impact, but may be important symbolically.

Early adopters of these policies often took action in the absence of evidence on the impact of these policies. Committed and creative individuals and organizations took the lead in making the theoretical and logical arguments about the effects of higher taxes, strong restrictions on smoking, and other policies on tobacco use and public health. Because of their efforts, numerous natural experiments took place in state and local laboratories across the country, allowing researchers to develop the evidence-base we have today that clearly show the effectiveness of these policies in preventing youth from smoking, encouraging adults to quit smoking, and improving public health.

There is no guarantee, however, that the reductions in tobacco use that have resulted from the adoption and implementation of effective tobacco control policies in the past will be sustained in the future. Recent data on youth and adult cigarette prevalence, for example, suggest that the downward trends of the past decade have flattened and that prevalence may begin to rise in coming years (University of Michigan News Service, 2006; CDC, 2006a). While tobacco product taxes have risen significantly in recent years, failing to raise taxes further can result in inflation eroding the value of these tax increases and contribute to declines in inflation adjusted cigarette prices. As importantly, continued growth in tobacco company marketing activities that reduce the price of cigarettes can offset the impact of higher taxes. The decline in inflation adjusted cigarette over the past couple of years reflects, at least in part, the impact of these increased price promotions and is likely to be one of the major factors contributing to the halting of the declines in youth and adult prevalence. Similarly, the sharp reductions in funding for comprehensive tobacco control programs in many states over the past several years are

almost certainly playing a key part in the recent lack of progress in further reducing smoking prevalence. The impact of these trends has been at least partially offset by the adoption of comprehensive smoke-free air policies covering much of the US population, but further strengthening of these policies is going to be difficult and the benefits of more incremental changes are likely to be smaller than those resulting from the significant expansions that have taken place recently.

Continuing to act on the lessons that have been learned about the effectiveness of tobacco control policies is critical to sustaining the substantial progress that has been made as a result of these policies and in further reducing the death and disease caused by tobacco use.

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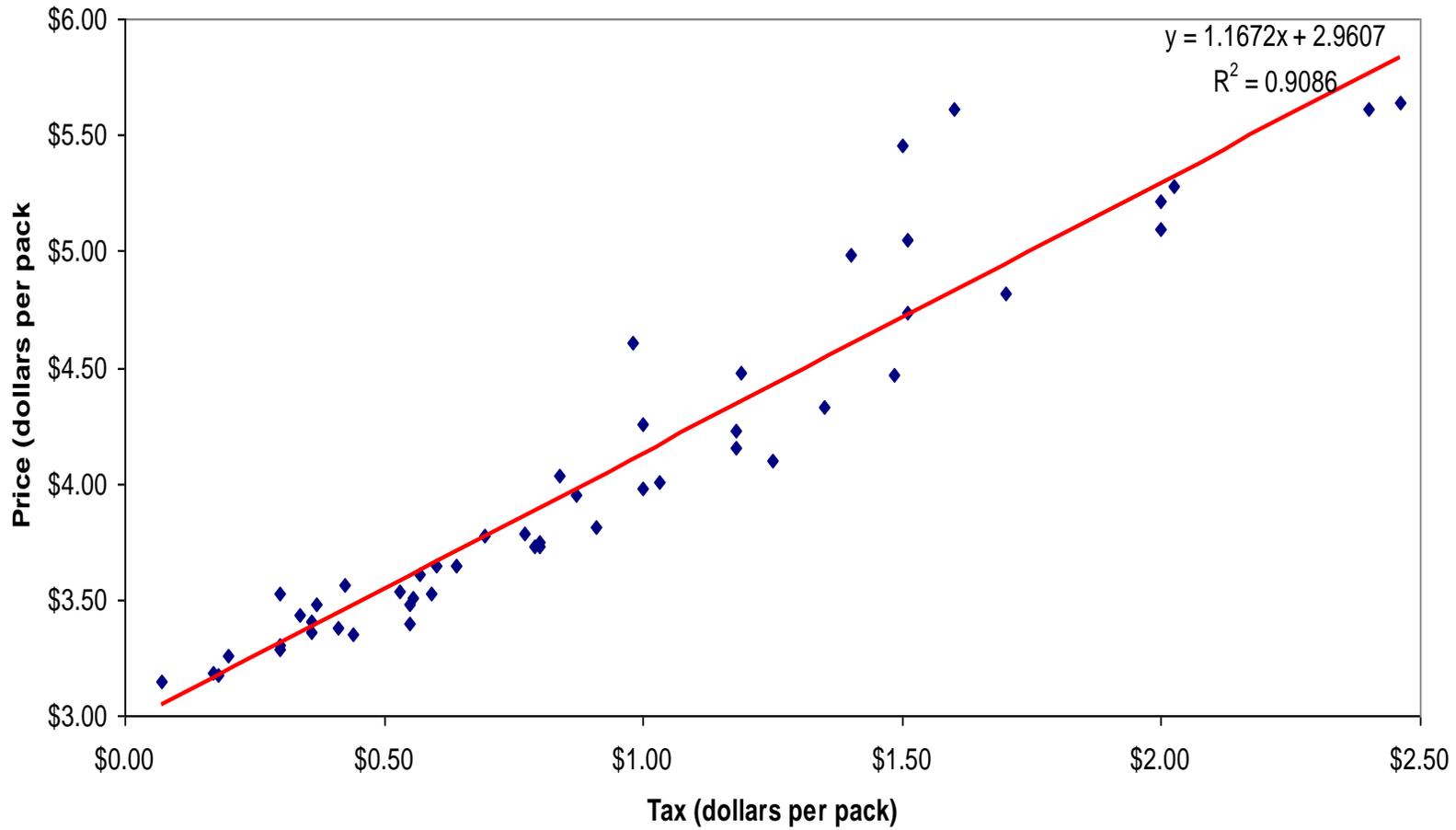
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Figure One

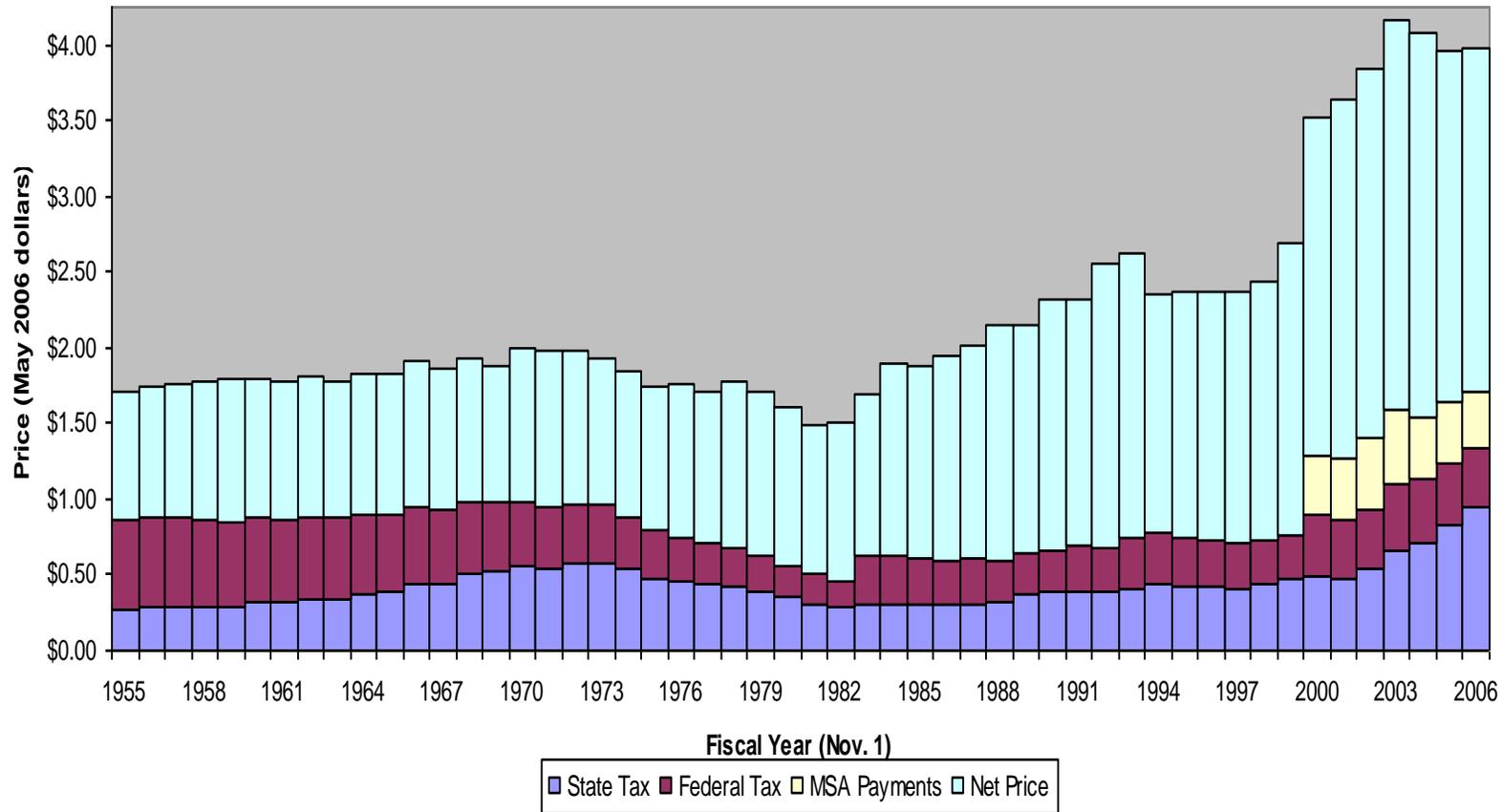
State Cigarette Taxes and Prices, November 1, 2005



Source: Orzechowski and Walker (2006) and authors' calculations.

Figure Two

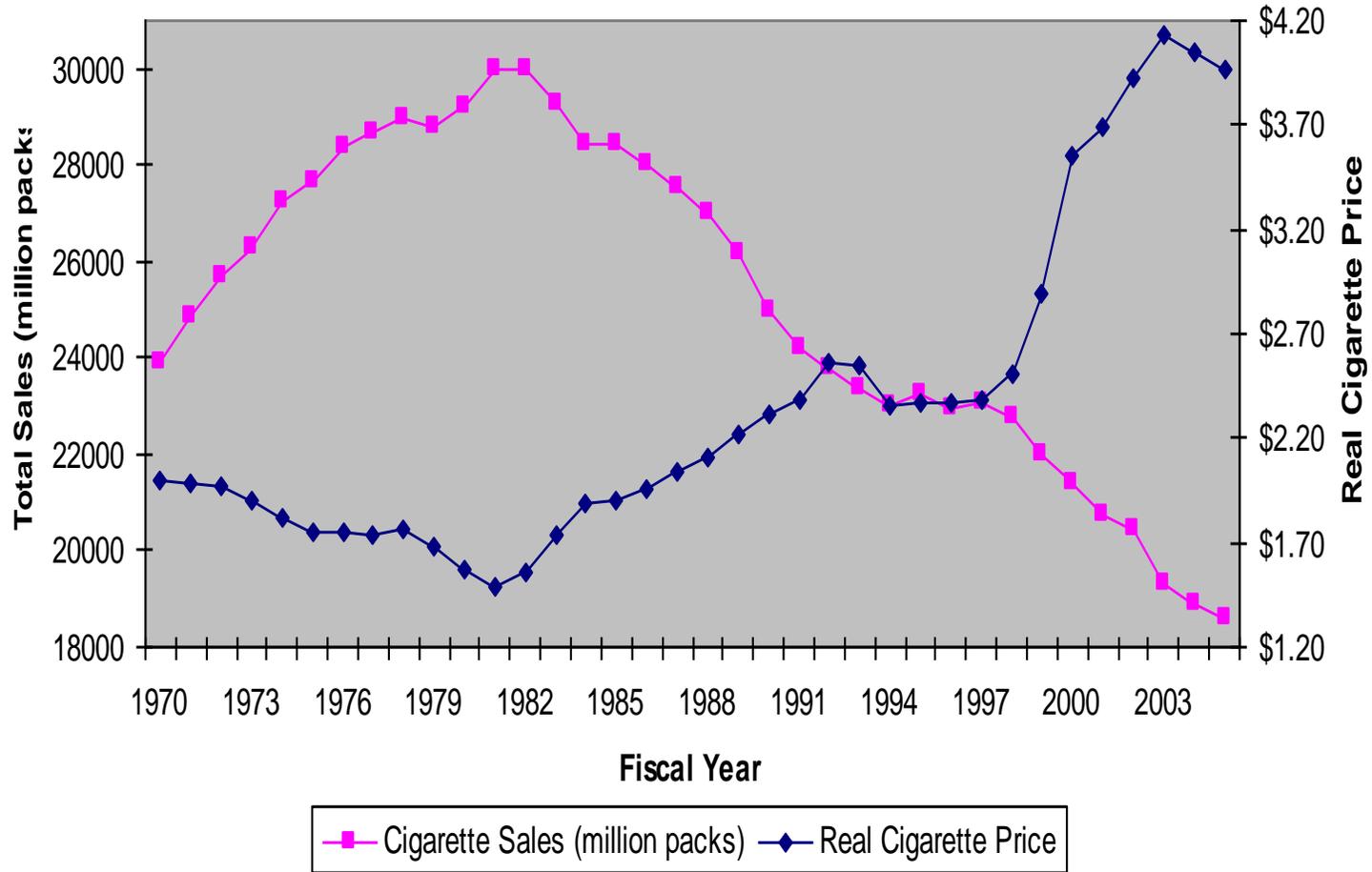
Inflation Adjusted Cigarette Prices, 1955-2006



Source: Orzechowski and Walker (2006) and author's calculations.

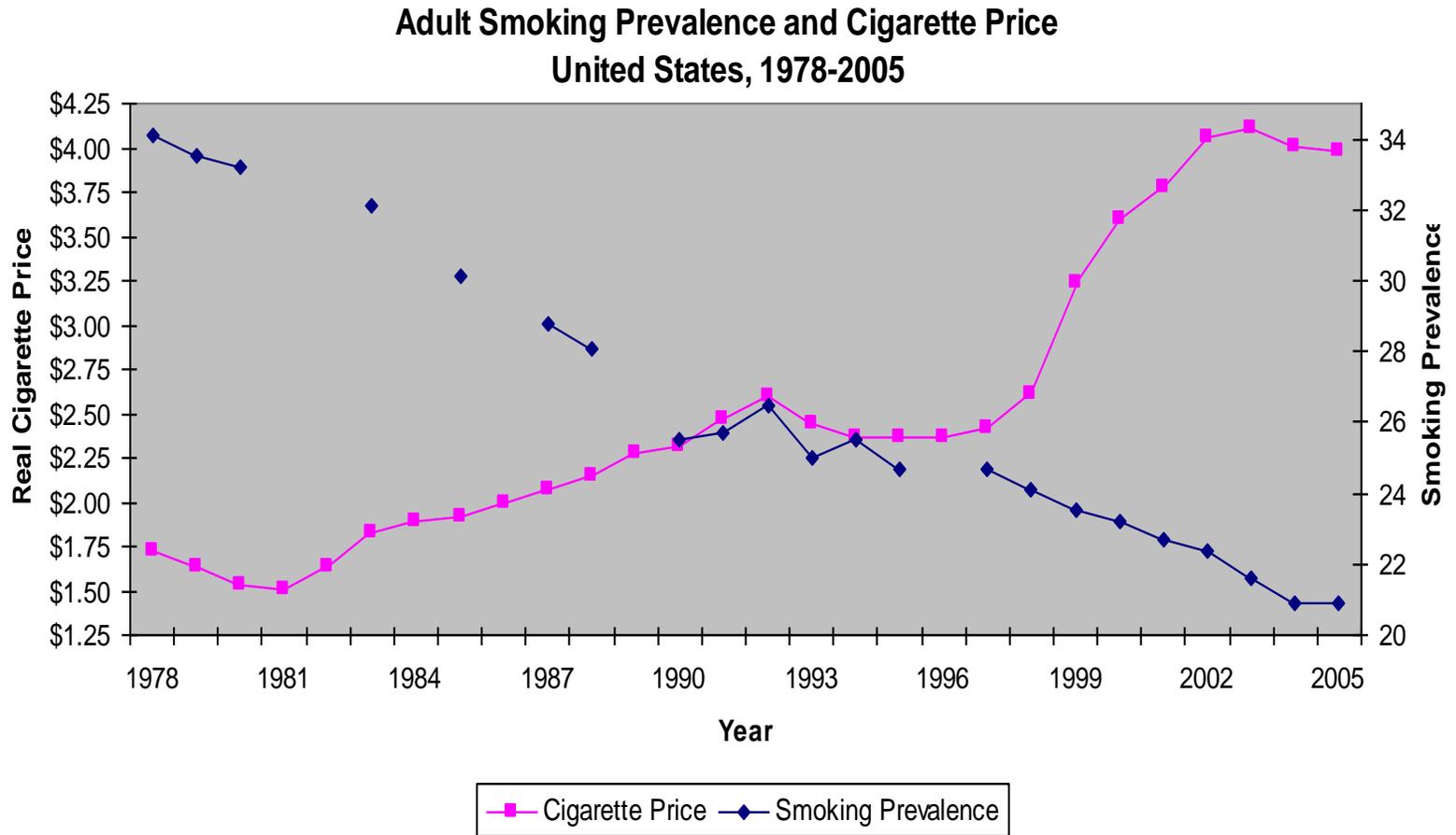
Figure Three

Total Cigarette Sales and Cigarette Prices, US, 1970-2005



Source: Orzechowski and Walker (2006) and author's calculations.

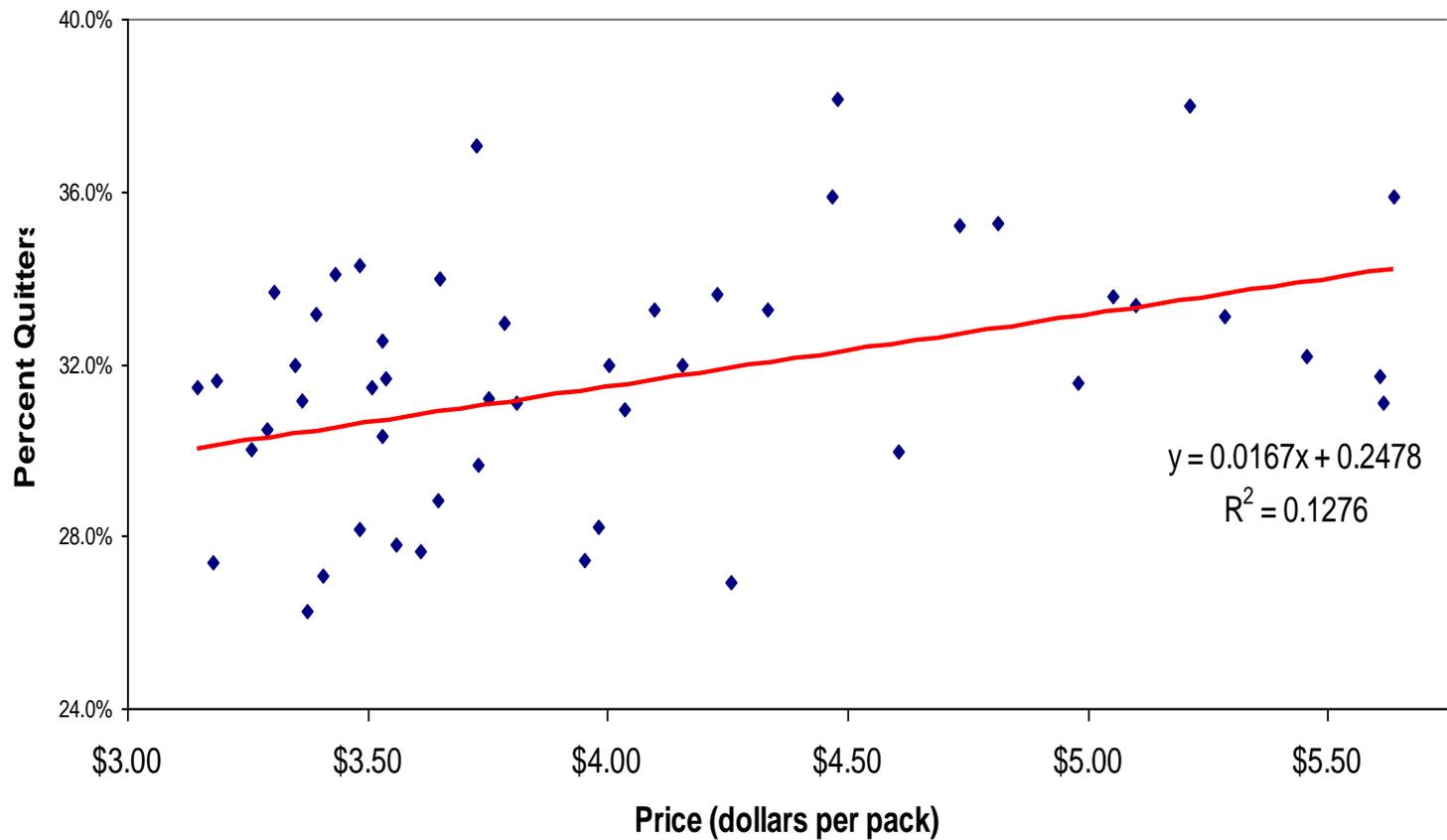
Figure Four



Sources: Centers for Disease Control and Prevention (2005, 2006a), Orzechowski and Walker (2006) and author's calculations.

Figure Five

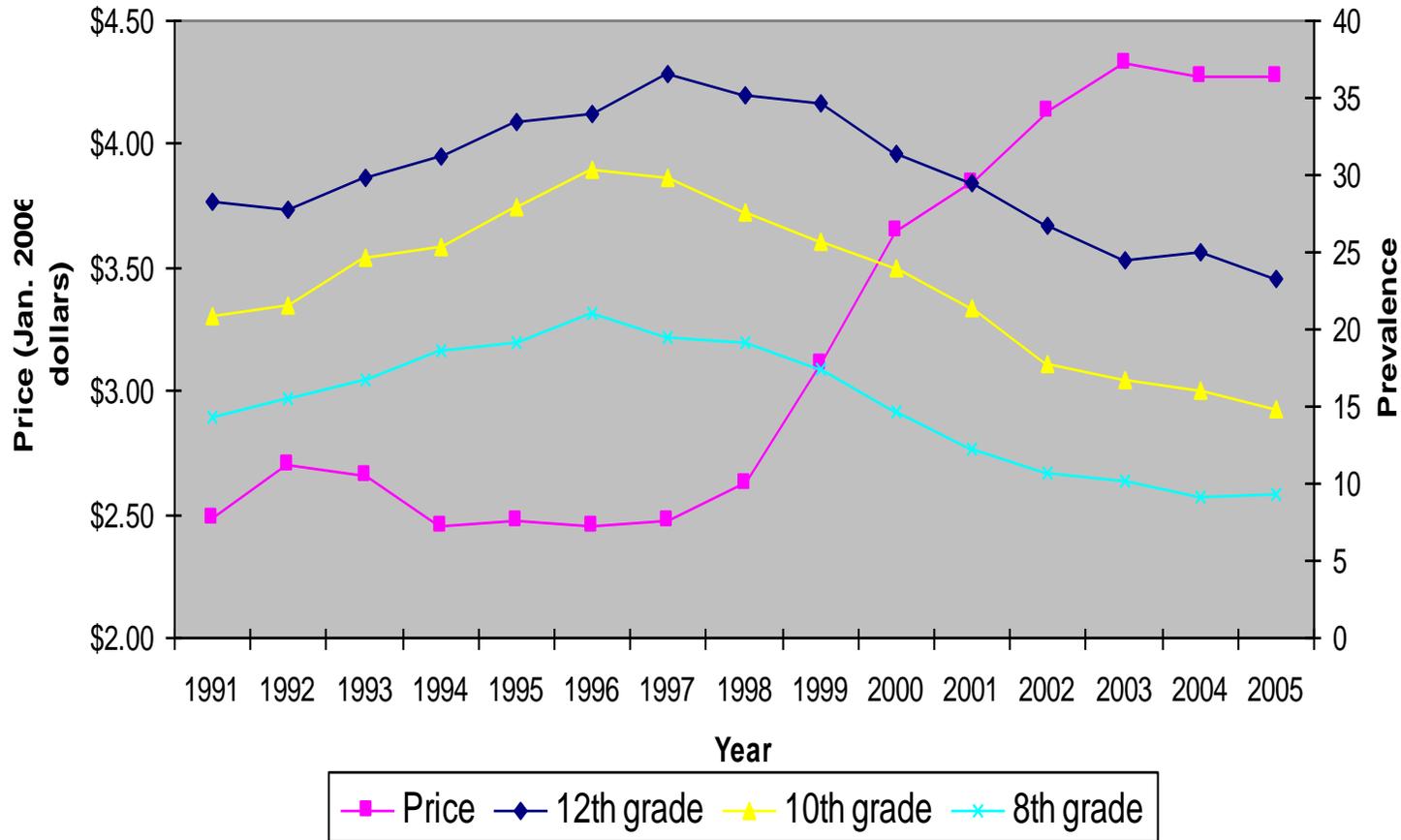
Cigarette Prices and Percentage of Ever Smokers Who Have Quit Smoking



Source: Centers for Disease Control and Prevention (2006b), Orzechowski and Walker (2006) and author's calculations.

Figure Six

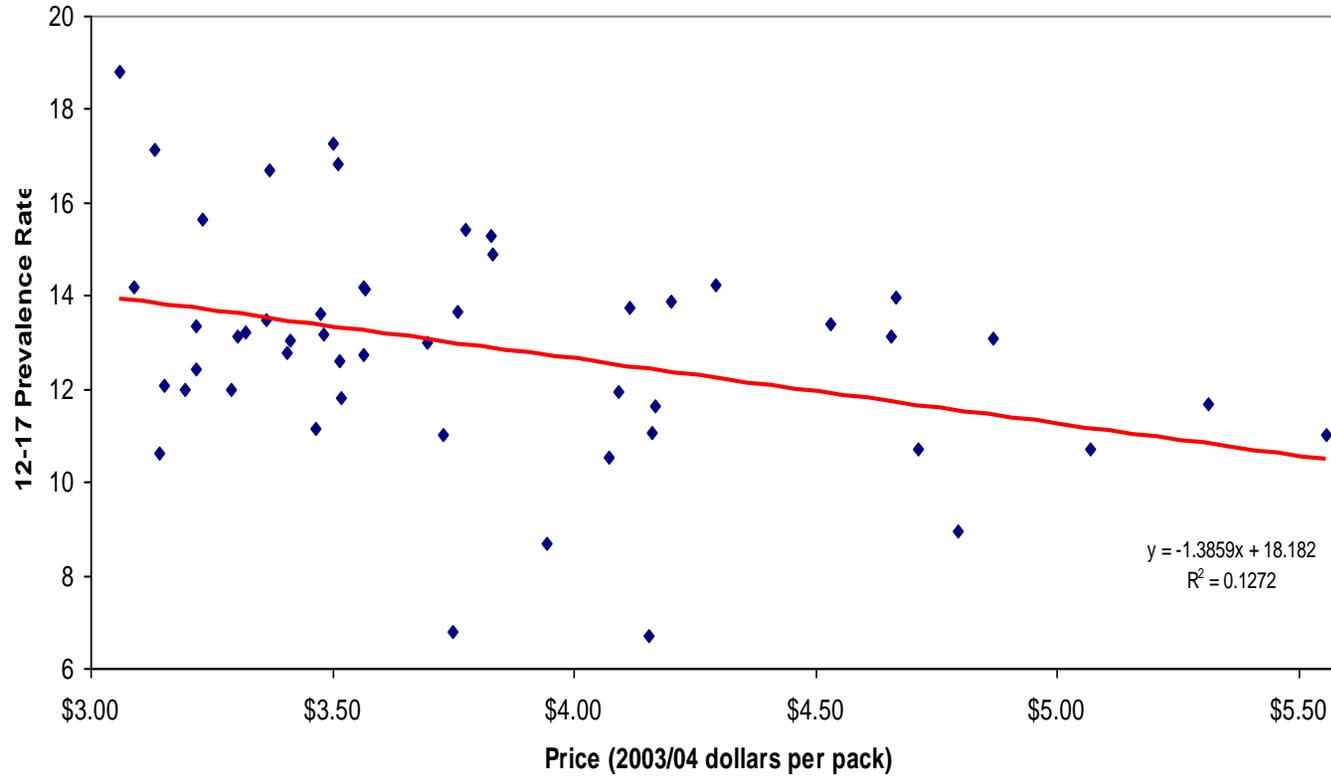
8th, 10th, and 12th Grade Smoking Prevalence and Cigarette Price



Source: University of Michigan News Service (2006), Orzechowski and Walker (2006) and author's calculations.

Figure Seven

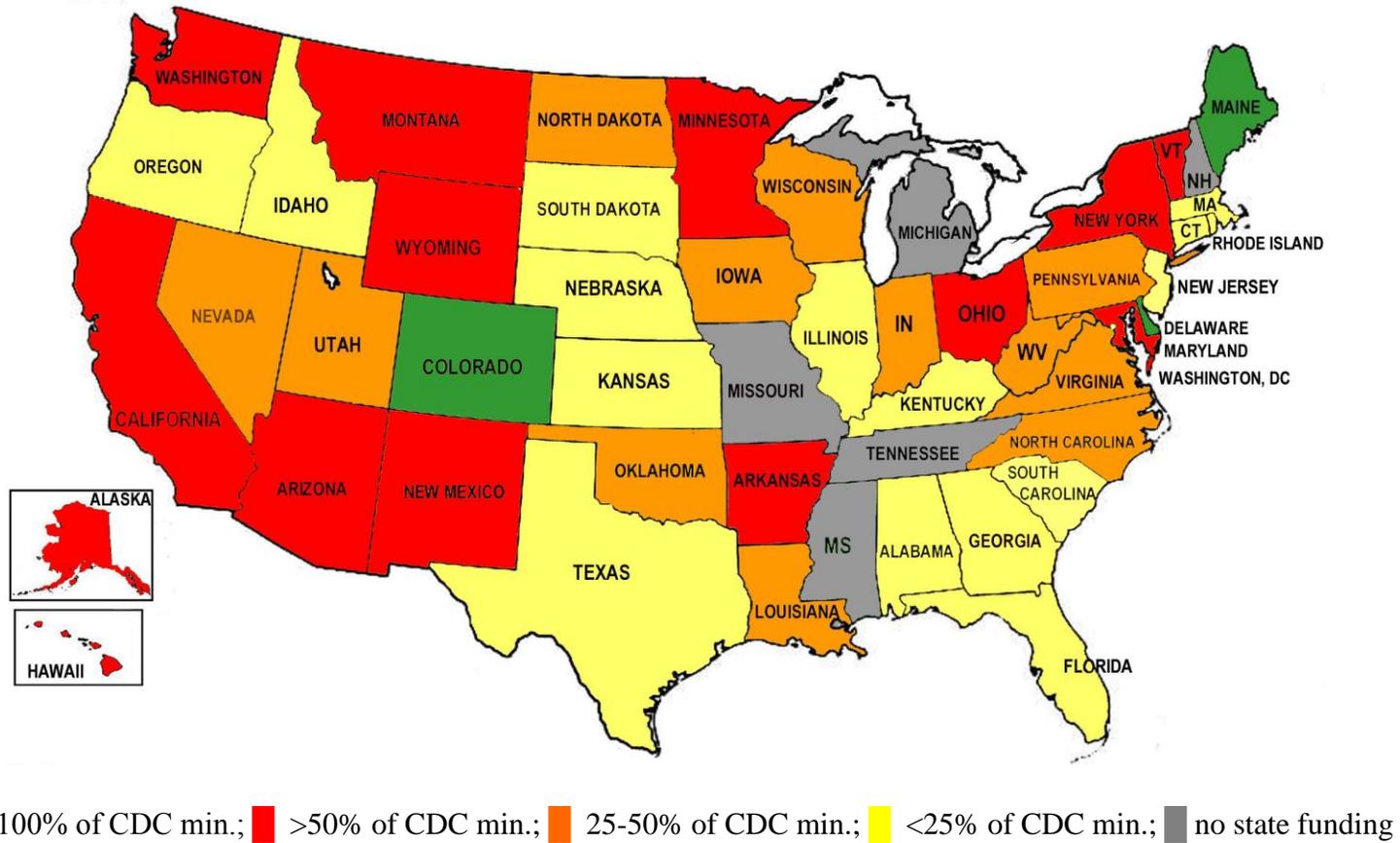
Cigarette Prices and Smoking Prevalence 12-17 Year Olds, 2003-04



Source: Substance Abuse and Mental Health Services Administration (2006a), Orzechowski and Walker (2006), and author's calculations.

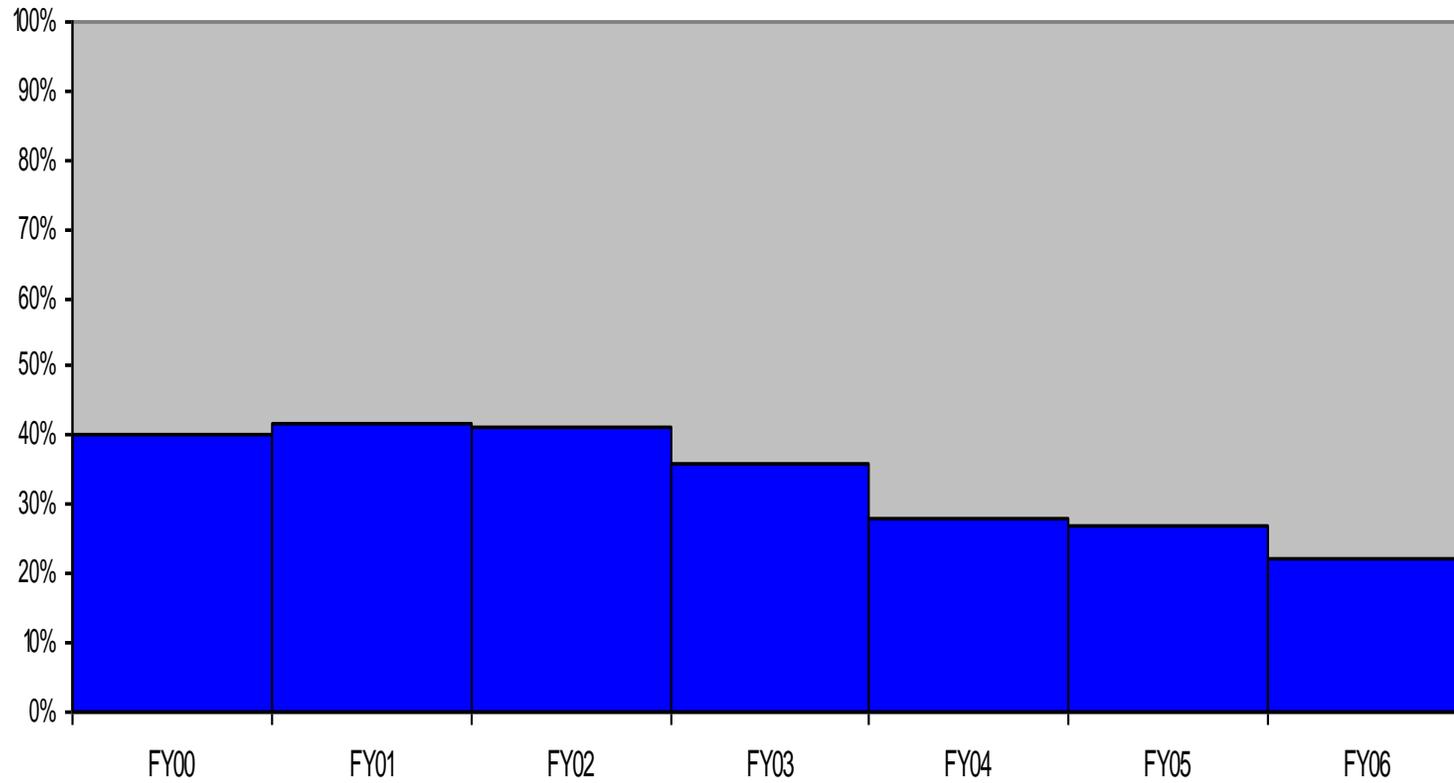
Figure Eight

Funding for Tobacco Prevention, FY2007



Source: American Heart Association, et al. (2006)

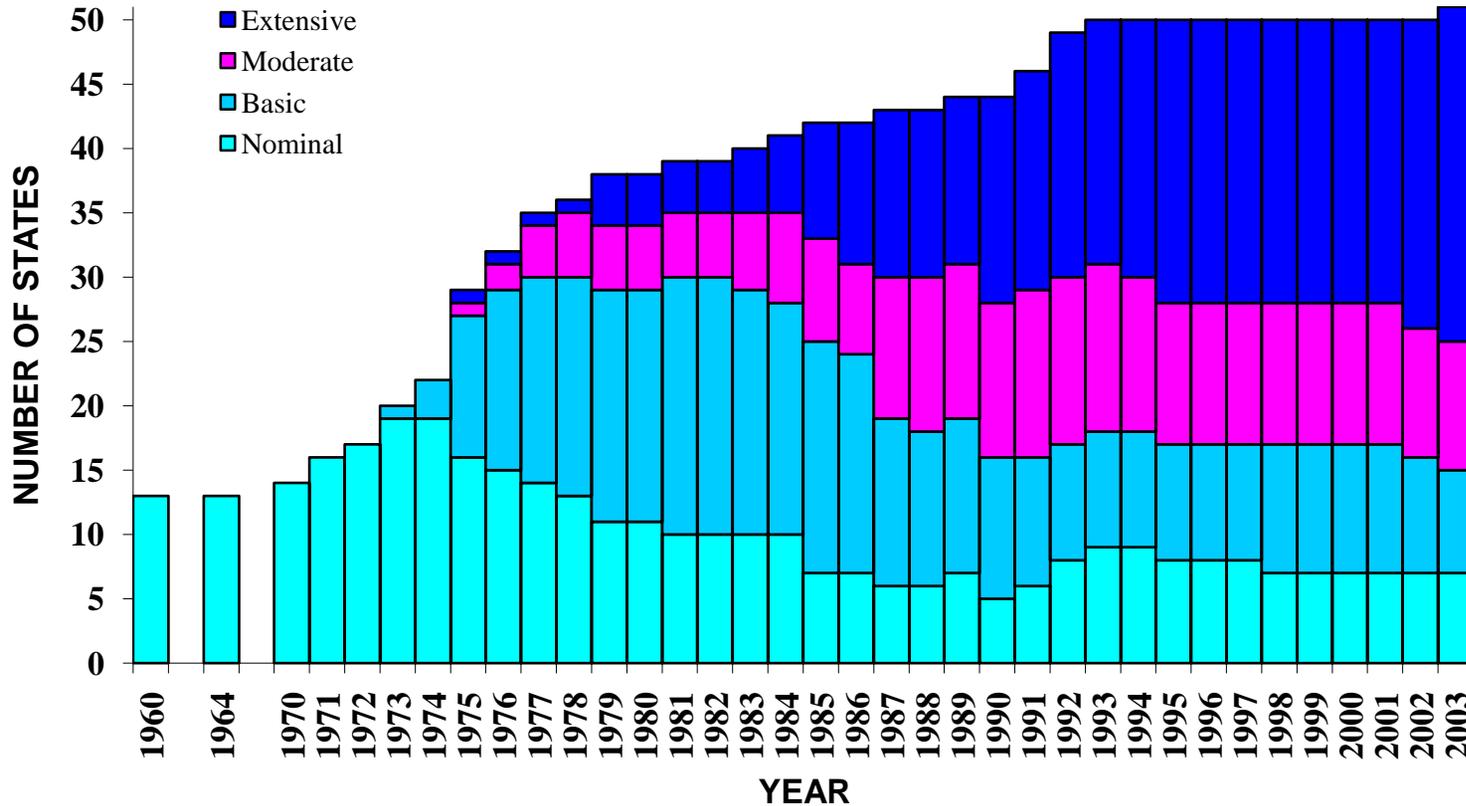
Figure Nine
**State Tobacco Control Funding as Percentage of CDC
Recommended Minimum, FY00-FY06**



Sources: American Heart Association, et al. (2006), CDC (1999), and author's calculations.

Figure Ten

Restrictiveness of State Laws Regulating Smoking in Public Places, 1960-2003

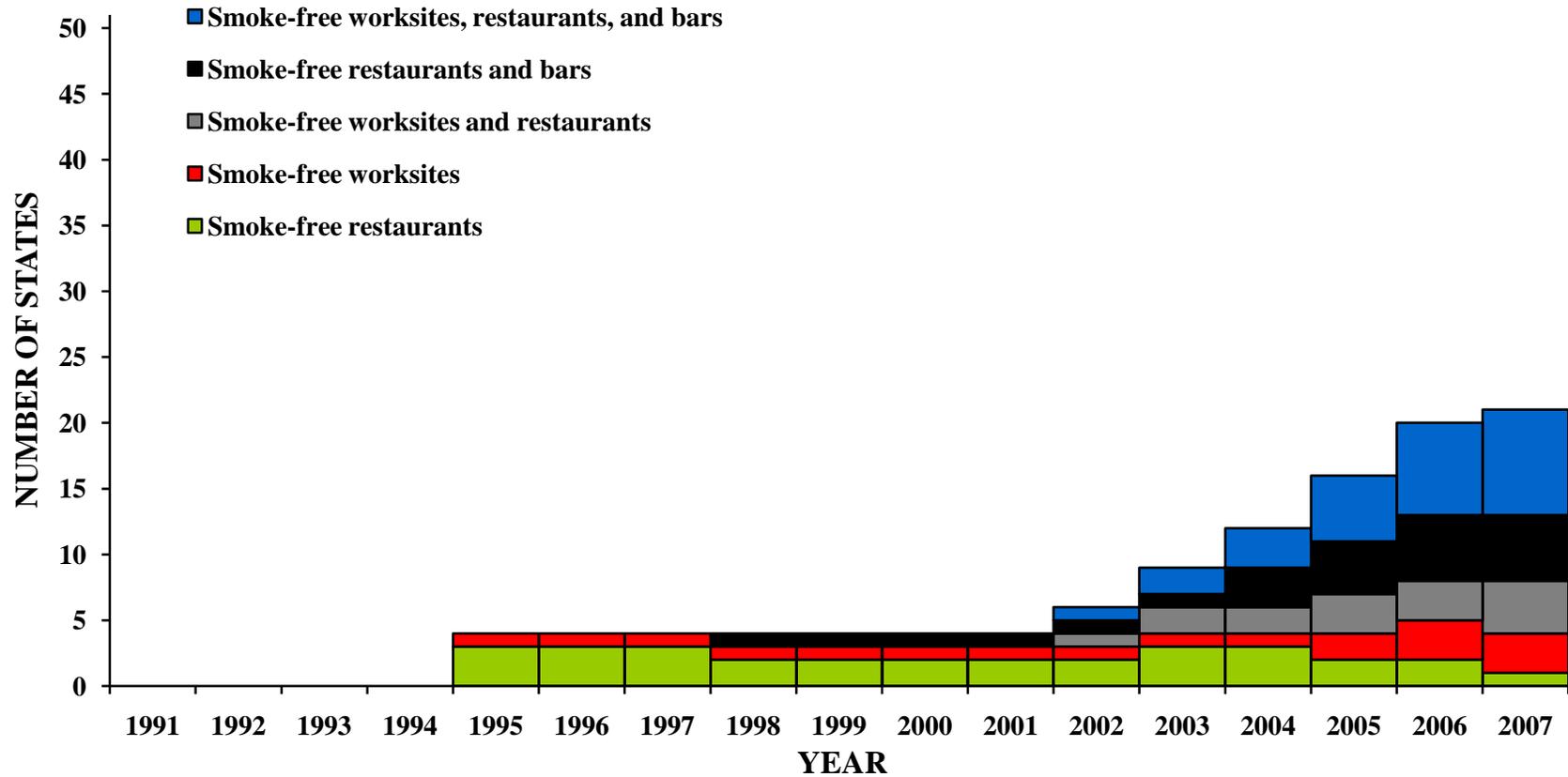


Note: Classification scheme from 1989 Surgeon General’s report (USDHHS, 1989) used to define restrictiveness, as follows: nominal – one to three public places, not including restaurants or worksites; basic – four or more public places, not including restaurants or worksites; moderate – regulates smoking in restaurants but not worksites; extensive – regulates smoking in private worksites.

Source: Roswell Park Cancer Institute and the ImpacTeen Project, unpublished data.

Figure Eleven

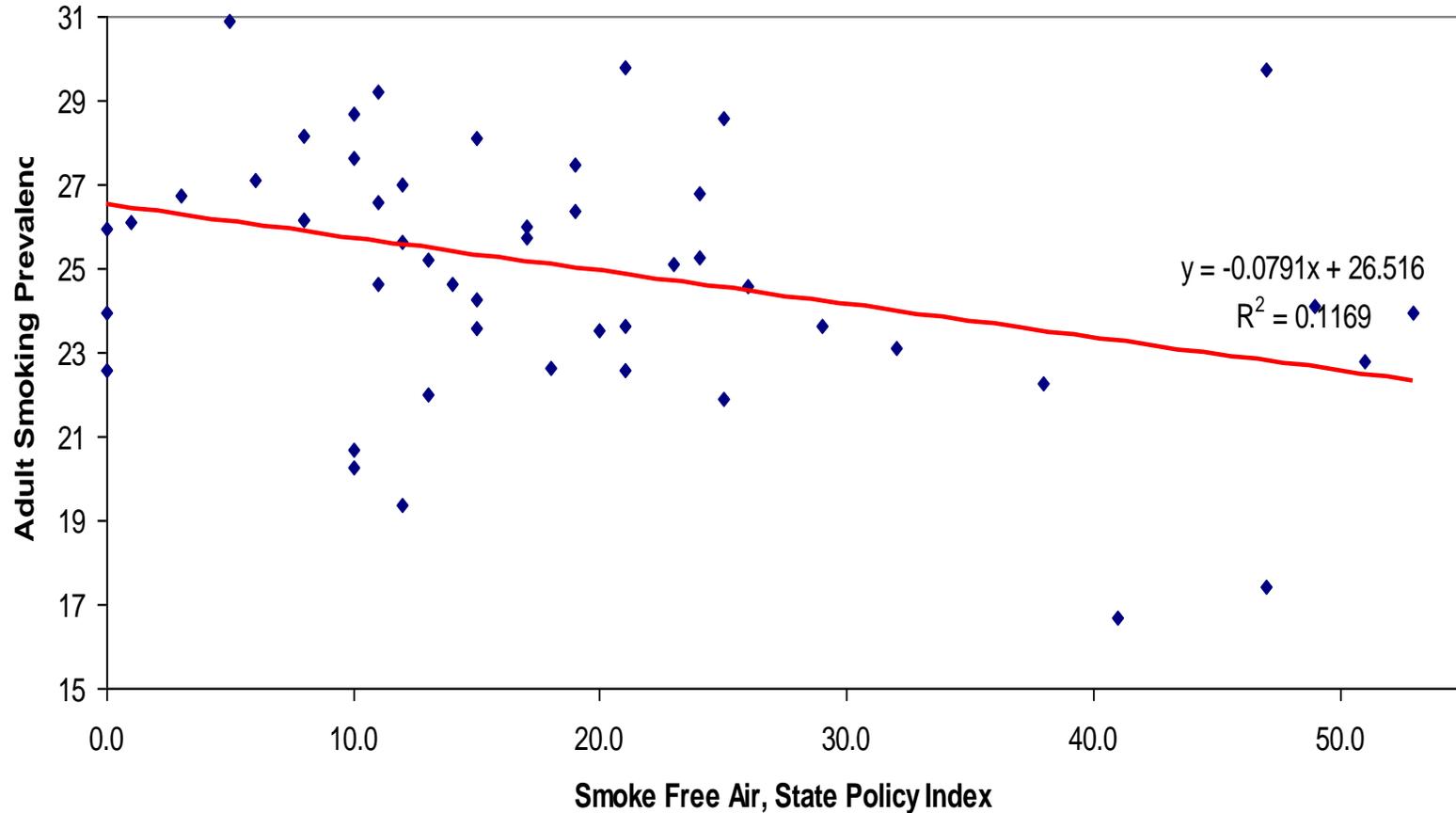
Major Smoke-Free Air Legislation in the 50 States and the District of Columbia, 1991-2007



Source: Roswell Park Cancer Institute and the ImpactTeen Project, unpublished data.

Figure Twelve

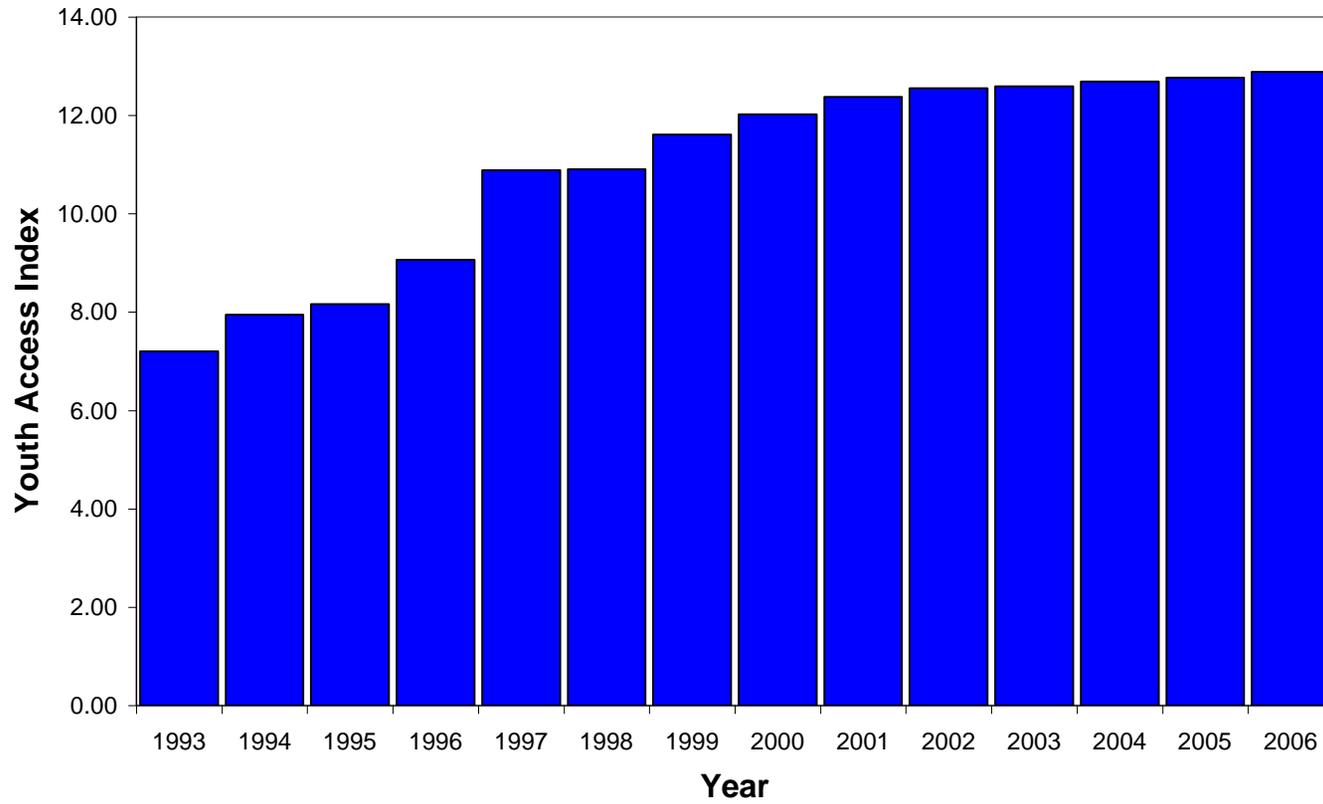
Smoke Free Air Policies and Adult Smoking Prevalence, 2003-04



Sources: Substance Abuse and Mental Health Services Administration (2006a) and Roswell Park Cancer Institute and the ImpacTeen project, unpublished data.

Figure Fourteen

Youth Access to Tobacco Products Scores, 1993-2006

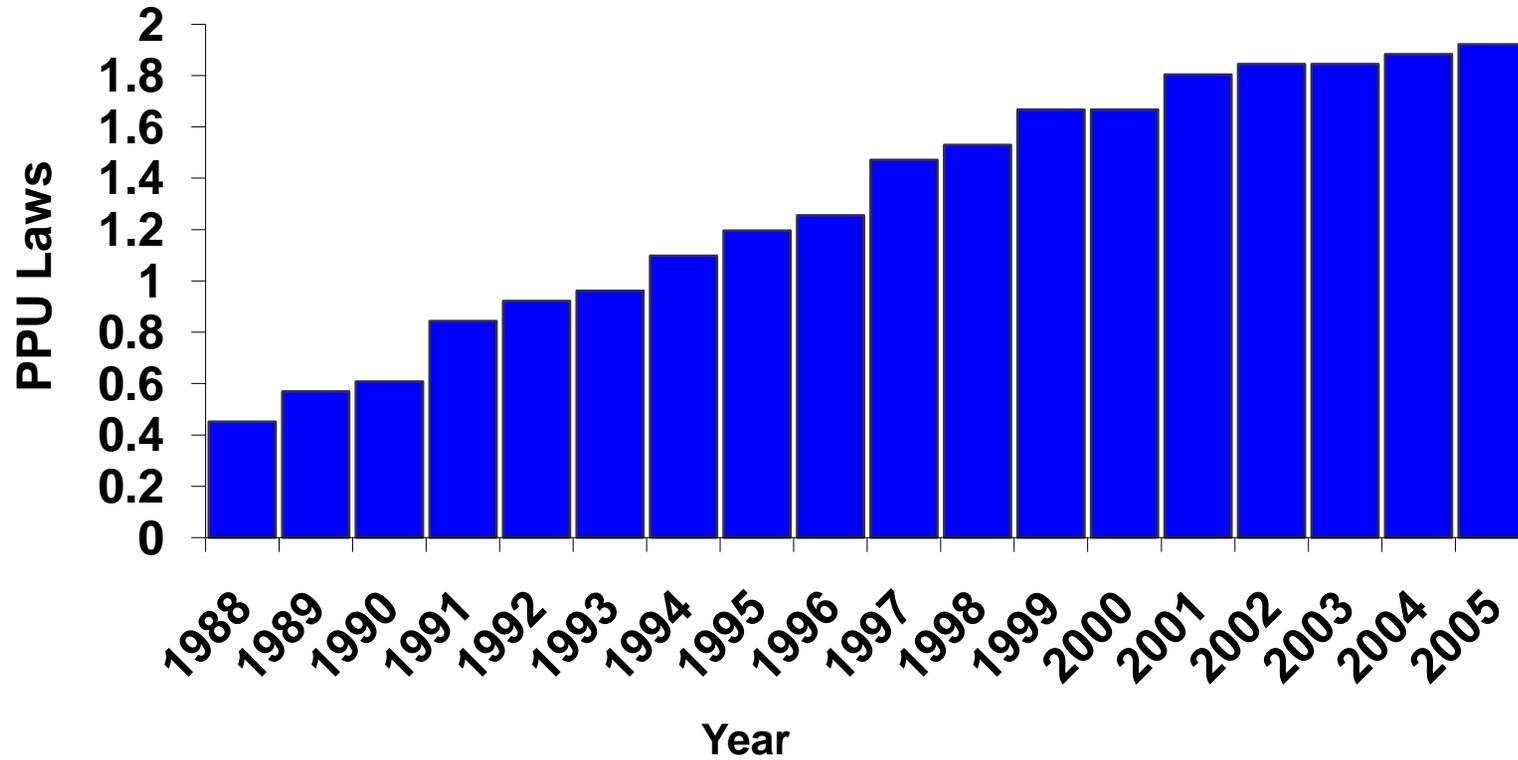


Note: Bars depict the simple average of state scores for the NCI State Cancer Legislative Database Youth Access to Tobacco total score, including pre-emption.

Source: National Cancer Institute (2007).

Figure Fifteen

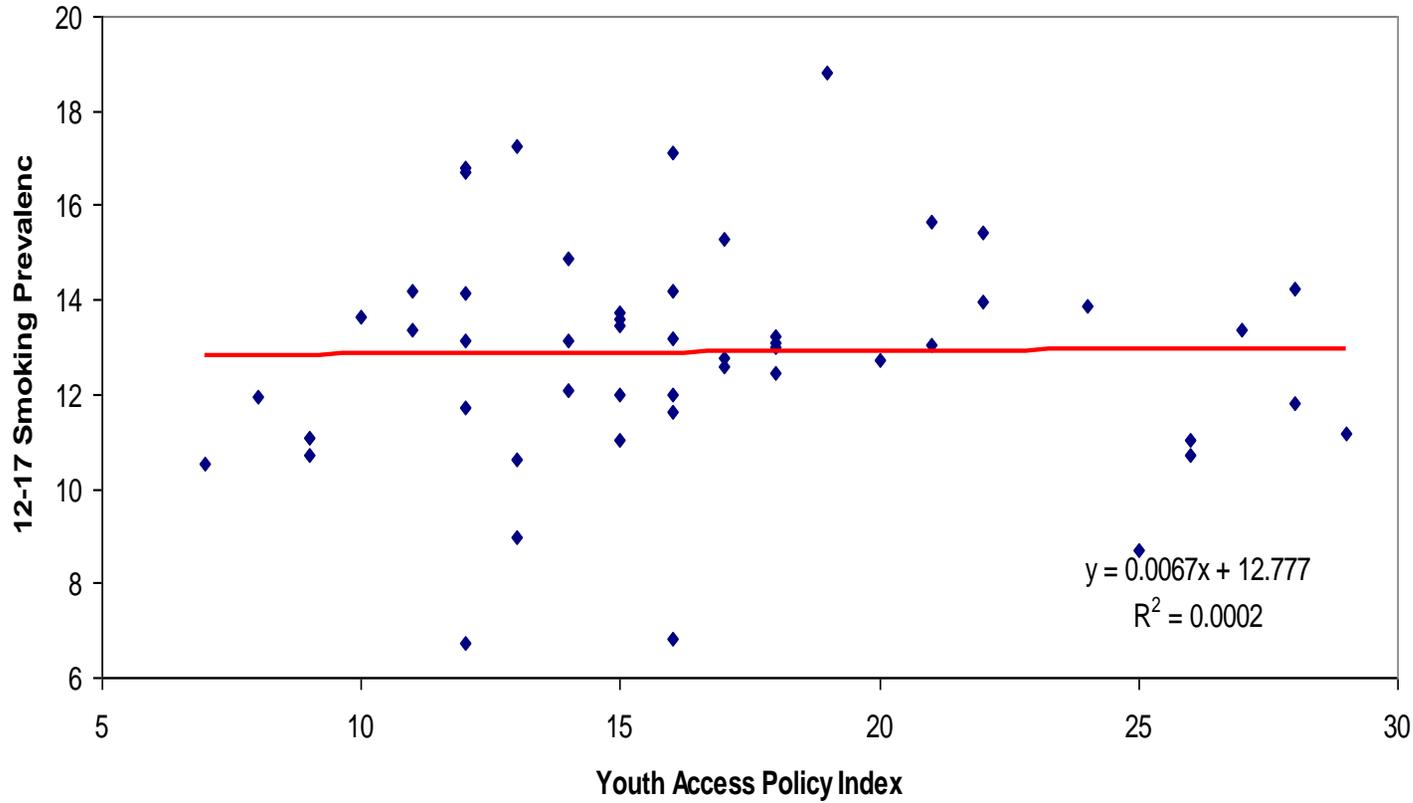
Mean Number of State Purchase, Possession and Use Laws, per State, 1988-2005



Source: Roswell Park Cancer Institute and the ImpactTeen Project, unpublished data.

Figure Sixteen

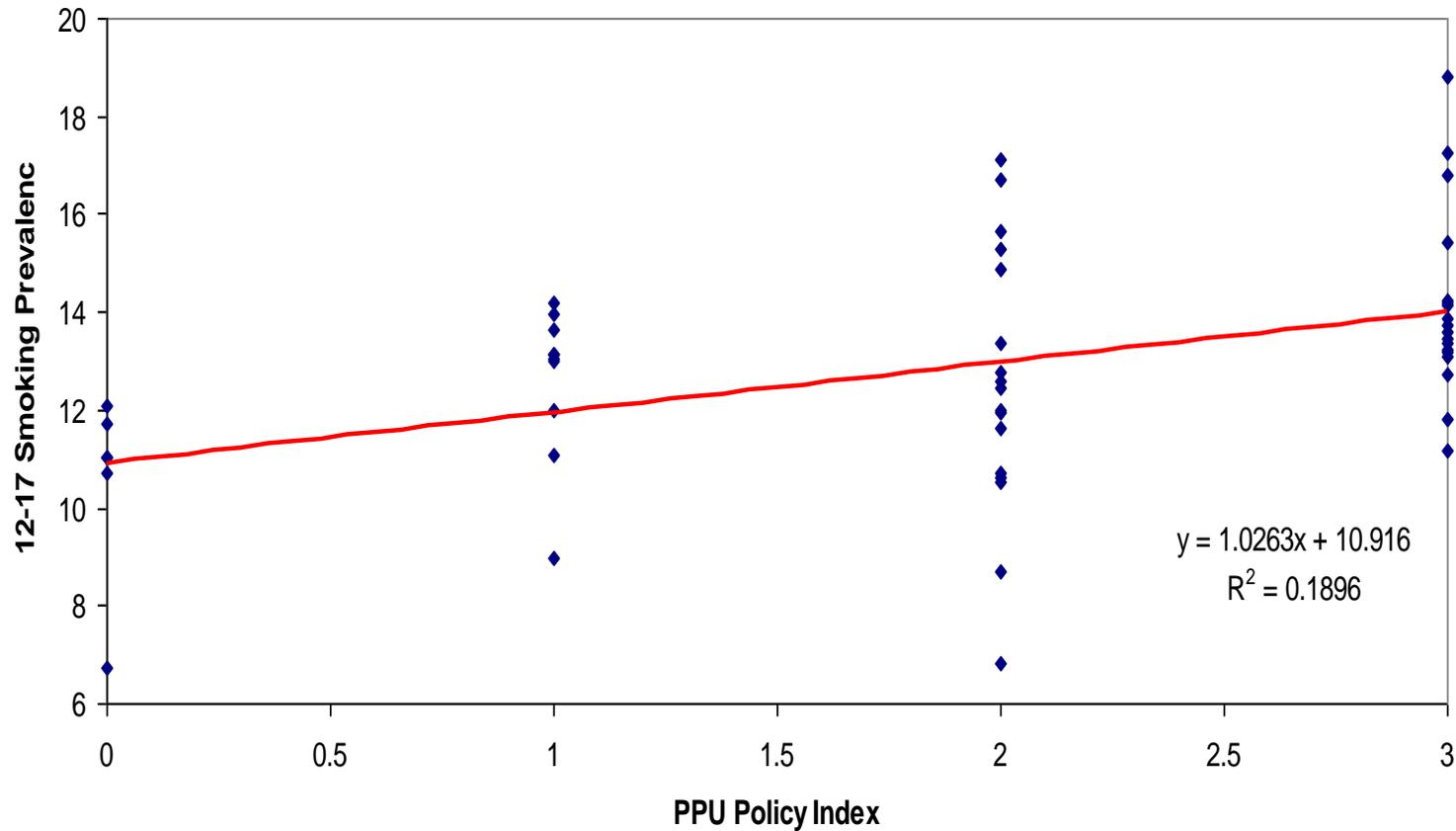
Youth Access Policies and Youth Smoking Prevalence 2003-04



Sources: Substance Abuse and Mental Health Services Administration (2006a), National Cancer Institute (2007), and author's calculations.

Figure Seventeen

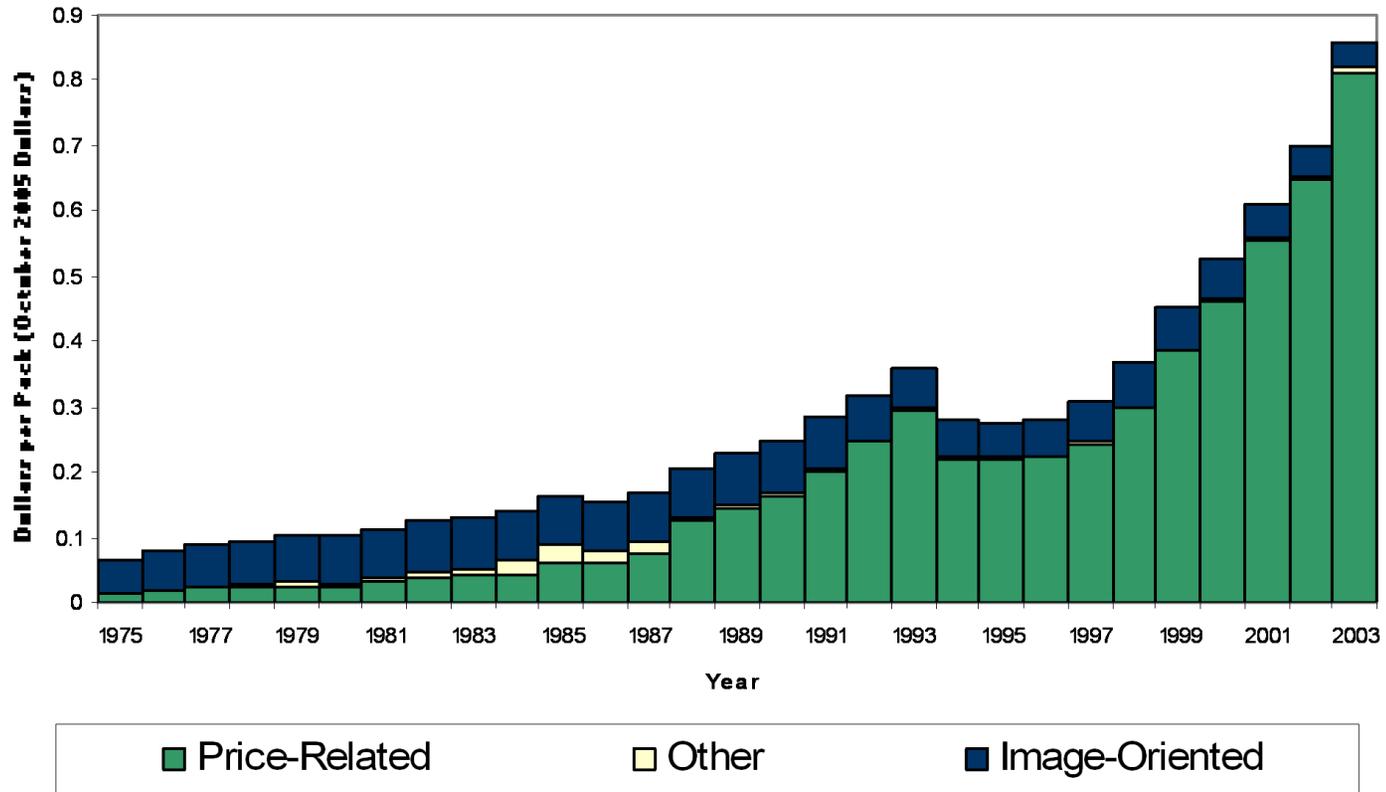
Purchase, Possession and Use Policies and Youth Smoking Prevalence, 2003-04



Sources: Substance Abuse and Mental Health Services Administration (2006a) and Roswell Park Cancer Institute and the ImpacTeen project, unpublished data.

Figure Eighteen

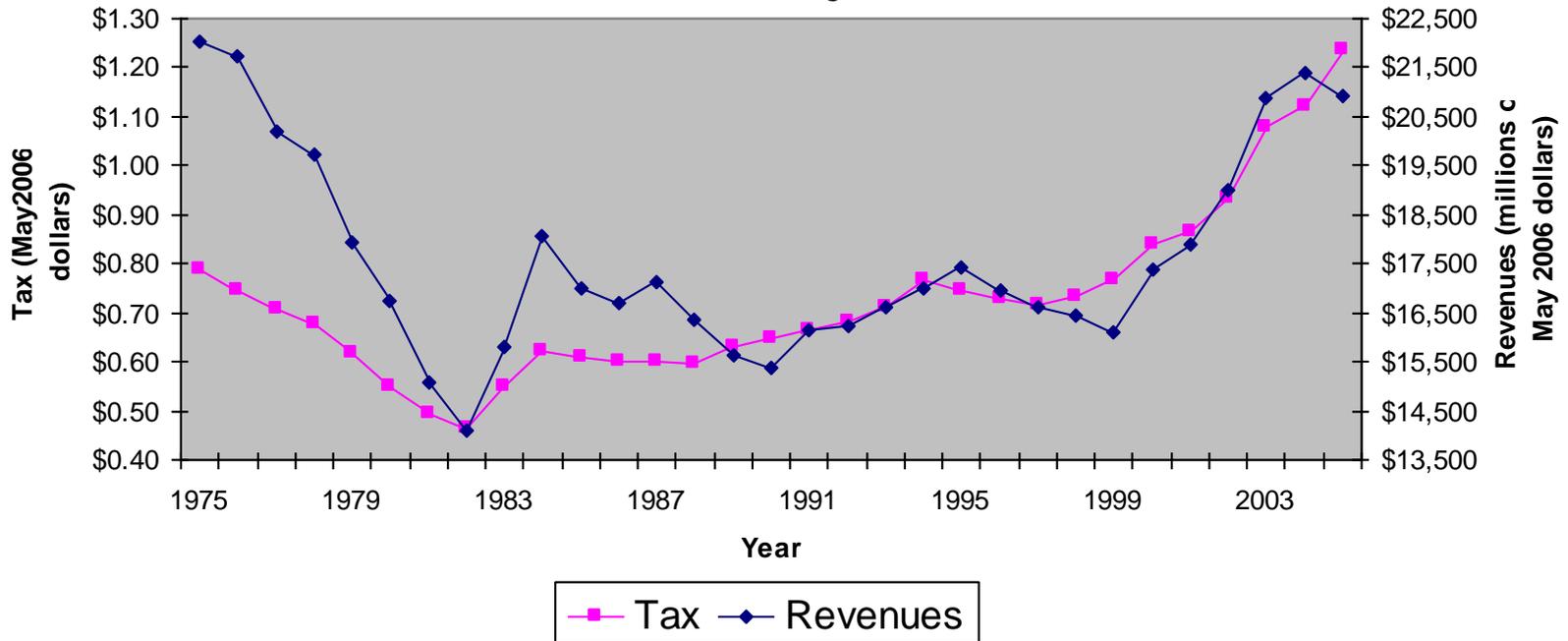
Cigarette Company Marketing Expenditures, Inflation Adjusted, 1975-2003



Source: Federal Trade Commission (2005) and author's calculations.

Figure Nineteen

Combined State and Federal Cigarette Taxes and Revenues, Inflation Adjusted, 1975-2005



Source: Orzechowski and Walker (2006) and author's calculations.

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