

Introduction

The use of tobacco products in the United States, especially among adolescents, has generated a major public debate over whether and how to control tobacco products. How extensively should the use of tobacco be regulated? Should we invest more to reduce adolescent smoking patterns? Should the nicotine content of cigarettes be regulated? Which level of government—local, state, or federal—should take the lead in tobacco control efforts? These are just a few of the questions animating a lively public policy debate.

For many years, the tobacco industry, through its ability to influence the political process at the state and federal levels, was able to shape the policy debate to its advantage. This is no longer true. Although the industry remains a formidable political force, it must now share how the policy debate is framed with its public health opponents. A few examples demonstrate how the political environment has shifted in the 1990s.

Within the past few years, we have witnessed events that were unimaginable 15 years ago, when the tobacco industry enjoyed enviable political dominance. That dominance is now being severely challenged on several fronts. Many people may remember the sight of chief executive officers from the tobacco industry testifying before a somewhat skeptical congressional committee that nicotine is not addictive. Then, when Senator Robert Dole, running in the 1996 presidential election, declared that cigarettes were not addictive, he was met by an outpouring of public derision and had to retreat hastily. At about the same time, the Food and Drug Administration (FDA), reversing previous policy that it lacked jurisdiction over tobacco products, attempted to regulate tobacco by adopting a youth-oriented set of policies.¹

Meanwhile, states began suing the tobacco industry to recover their health care costs associated with smoking among Medicaid recipients.

Even though the tobacco industry had rarely lost in defending lawsuits brought by individuals to recover damages suffered by using tobacco, the states' litigation added a new and more threatening dimension. For a while, it seemed that rarely a day passed without another damaging disclosure of tobacco industry documents detailing how the industry had misled the public about the harms caused by its products.

The increasing public scrutiny of the tobacco industry and the accompanying litigation encouraged the industry and its public health critics to settle their differences. An initial settlement was reached in 1997, but it required congressional action to implement. Throughout much of 1997 and 1998, Congress debated the legislation (named the McCain Bill after being introduced by Republican senator John McCain of Arizona) but was unable to enact or agree on any compromise legislation. A massive and effective media campaign by the tobacco industry depicted the legislation as a "big government" solution and caused serious defections from earlier support. After the attempted legislative solution failed, the two sides continued negotiating and skirmishing in the courts. Finally, the states' litigation against the tobacco industry was settled in November 1998. As we discuss in chapter 1, the eventual settlement agreement was substantially less onerous to the tobacco industry than the proposed 1997 agreement would have been. Money from the settlement is now being distributed to the states.

At the same time as the political and policy debates have been unfolding, researchers have continued examining all facets of the use and health effects of tobacco. The research includes attempts to understand why adolescents begin smoking and whether genetic predispositions are related to nicotine addiction, as well as studies concerned with which tobacco control strategies are most effective in reducing tobacco use and how to help regular smokers quit. By now, the research is so voluminous that it is difficult even for specialists, let alone interested nonexperts, to keep up to date on all developments. Given the debate over how to allocate the settlement funds and how to regulate the use of tobacco products, policymakers, tobacco control advocates, and interested citizens need accessible information on the latest research findings to help shape public policy.

About This Book

Objectives

In this book, we synthesize the vast amount of research and policy thinking on how to discourage teen smoking in the United States. Our

primary objective is to provide a comprehensive report on the status of tobacco control with regard to children and adolescents (whom we define as children between 12 and 17 years old). (Our reasons for focusing on adolescents are discussed in chapter 1.) In providing a comprehensive synthesis and analysis of existing information, we hope to contribute to the development of an informed research agenda and to the design and adoption of reasonable and effective policy measures. Right now, a lot of information is available about tobacco control and adolescent use of tobacco products (especially cigarettes), but this information is fragmented and not easily accessible to the non-specialist. One of our goals is to provide a compendium of what we know about adolescents and tobacco use—and to point out, as well, those areas in which we still require additional knowledge to deal with the problem effectively. We need to know, in brief, what research exists, what gaps remain, what programs have been developed, which programs have been evaluated, and how effective the programs have been. Another goal is to address why most children do not become regular smokers, even though most experiment with cigarette smoking. This book provides one convenient source of the available research and thinking on adolescent tobacco control for policymakers, tobacco control advocates, researchers, and interested lay persons to reflect on and use.

In this book, we focus our attention on the following areas:

- The literature on adolescent use of tobacco products, focusing on data trends and data availability, major themes and arguments, and existing reports
- Any studies evaluating the effectiveness of programs or laws dealing with adolescent tobacco use, including the effects of price and tax increases
- Smoking prevention and cessation programs aimed at adolescents
- Innovative programs that are underway but have not yet been evaluated.

For comparison purposes, we also consider the literature on the prevention of teenage alcohol and substance use, to assess the applicability of programs in those areas to tobacco control efforts.

We focus on synthesizing information updating the Institute of Medicine's (IOM) and Surgeon General's reports from 1994.² But since the entire tobacco policy environment has changed since then, we

frame a research and policy agenda that reflects new circumstances and opportunities to discourage youths from consuming tobacco products.

Organization

This book is divided into two parts. In part 1, “Adolescent Smoking in Context,” we discuss the nature of the adolescent smoking problem. Chapter 1 establishes the policy context regarding adolescent smoking. In chapter 2, we set forth basic trends in adolescent smoking behavior and identify the available data sources. Chapter 3 describes the social context in which adolescent tobacco use occurs, such as peer and parental influences. While there is a considerable amount of literature as to why adolescents smoke, there is less attention in the literature to understanding why most adolescents do not smoke, which we also consider.

Part 2, “Strategies for Adolescent Smoking Prevention and Control,” is devoted to reviewing alternative strategies that policymakers can pursue to prevent and control adolescent tobacco use.³ Most of part 2 reviews programs that have already been evaluated, but we also discuss innovative programs now emerging that have not yet been subject to formal evaluations. To organize the information, we have categorized the relevant tobacco control efforts into the following areas: (1) school-based educational interventions, (2) community interventions, (3) cessation programs, (4) youth access restrictions, (5) regulatory restrictions on tobacco products and use, (6) mass media/public education, (7) tobacco advertising restrictions, and (8) tobacco excise taxes.

In chapter 4, we describe the extensive literature evaluating adolescent smoking prevention interventions and youth smoking cessation programs. Understanding the content and efficacy of past prevention interventions is critical for assessing new efforts and deciding how to allocate tobacco control funds. In chapter 5, we consider the various media and advertising influences on adolescent smoking behavior. In particular, this chapter explores how industry insights into adolescent behavior can be used to redirect antismoking messages. We also consider the evidence on the effects of advertising and advertising bans on youth smoking behavior.

In chapter 6, we consider various influences on the price of tobacco products and how higher prices might influence teen smoking. Since most tobacco control advocates endorse strategies to raise cigarette

prices, it is important to understand just how teens will react. Chapter 7 discusses various strategies for regulating youth smoking, such as laws restricting youth access to tobacco, the effects of clean indoor air laws, and alternatives for product regulation. The chapter also assesses changes over time in state and local restrictions on youth access to tobacco.

In our “Conclusion and Recommendations,” we synthesize our findings and present recommendations that policymakers can consider in designing and implementing an effective tobacco control program. We also describe a preliminary research agenda that other researchers can build on to assist policymakers in developing smoking control programs. As part of the research agenda, we stress the need for policymakers, tobacco control researchers, and tobacco control advocates to evaluate programs initiated to reduce adolescent tobacco use. We do not offer a magic solution that will lead to dramatically reduced smoking initiation rates. Instead, we advocate a comprehensive, long-term strategy that will discourage adolescent tobacco use.

As this book will demonstrate, considerable uncertainties remain about which tobacco control strategies are likely to be successful. But here we show that there is sufficient positive information for policymakers to implement both short- and long-term policy prescriptions. Throughout this book, we intend to provide policymakers with information about what works and about how they can develop and implement a sound tobacco control strategy to discourage adolescent smoking.

Conceptual Approach

At the heart of our conceptual approach is the argument that a coherent strategy focusing on the use of tobacco products by youths can be developed and translated into effective public policy and interventions. Teenage smoking rates are of particular concern because considerable research has shown that few people initiate smoking behavior once past their teenage years.⁴ By age 18, most people who will ever smoke routinely have already become or are in the process of becoming habitual smokers. As long as it remains difficult to quit smoking, tobacco will remain the major preventable cause of morbidity and mortality, although premature deaths can be avoided through effective smoking cessation programs. In the long term, strategies to avoid teenage smoking in the first place are likely to prove effective and consequential. As

a result, a significant aspect of the policy and research agenda should be to develop cost-effective measures for reducing youth smoking initiation rates.

We believe that tobacco control advocates have yet to develop a comprehensive strategy to achieve these longer-term goals. Starting in 1994 with both the surgeon general's report, which focused on youth smoking, and the IOM's report, which focused on nicotine addiction in children, tobacco control advocates showed heightened emphasis on a comprehensive research and policy strategy. The IOM has released a report arguing in favor of the kind of comprehensive approach we are recommending.⁵ The Centers for Disease Control (CDC) has completed a similar document outlining the best tobacco control practices.⁶ Whether this represents an emerging consensus among tobacco control advocates on how best to proceed remains to be seen.

As we detail in chapter 1, tobacco control advocates disagree as to where tobacco control resources should be concentrated—on reducing adolescent smoking or on comprehensive approaches that would include adult cessation. Essential to dramatically reducing the public health burden of tobacco, along with teen smoking initiation rates, are the notions of complementarity and comprehensiveness in tobacco control. By this we mean that tobacco control resources should be devoted (in greater amounts) to both youth prevention and adult issues. An effective long-term strategy to reduce youth smoking initiation rates should be viewed as complementary to a more comprehensive approach that includes adults. For instance, there is reason to believe that a parallel strategy of encouraging addicted adults to quit smoking while simultaneously addressing youth smoking prevention efforts would be a cost-effective strategy for reducing morbidity and mortality costs. There is a large opportunity for targeting smoking cessation programs to adults and eventually migrating to cessation programs for nicotine-addicted adolescents. Of equal importance, getting adults not to smoke would be a good model for encouraging youths not to use tobacco products.

One of the defining characteristics of tobacco control—regardless of whether or not one adopts a youth-oriented focus—is recognition that a successful assault on the disease burden created by smoking necessarily must be multidimensional.⁷ Individual interventions do work on their own. For example, smoking cessation treatments do help a subset of smokers to quit, tax increases clearly discourage children from smoking and reduce smoking by adults, and prohibitions on smoking

in public places clean the air for nonsmokers and decrease smoking prevalence and daily consumption among ongoing smokers. Yet, alone, each of these interventions is only tinkering on the fringe. Collectively, these and other interventions may exhibit powerful synergism. The smoker committed to participating in a cessation treatment, for instance, stands a better chance of quitting if the external environment discourages smoking, as when smoking is prohibited in public places. That same smoker is more likely to succeed in quitting if the price of cigarettes rises due to a tax increase.

Developing appropriate public policy is integral to successfully achieving the goals of reduced tobacco use. While aspects of our approach will rely on tobacco control groups and community organizations for design and implementation, we want to help policymakers identify the most promising policy interventions to maximize the effectiveness of tobacco control resources devoted to preventing youth smoking.

Research Methods

We conducted an extensive literature review and synthesis of published research addressing interventions to reduce youth smoking. Through Medline, a database of health-related journals and reports, we identified articles reporting evaluations of smoking prevention and control initiatives involving youth. While we reviewed some pre-1994 literature, our focus was on what has been learned since 1994, when both the IOM's and surgeon general's reports were published.

In addition, we collected and reviewed information on emerging initiatives and interventions that have not yet been evaluated or received much attention in the peer-reviewed literature. We monitored reports of new strategies distributed through several different electronic mailing lists. We also conducted a series of informal interviews with tobacco control advocates in the United States to identify emerging trends and promising innovations to discourage youth smoking. For example, we discuss in this book the emergence of computer-based systems in tobacco control, peer-based interventions, and penalizing youth for tobacco possession and use. It should be noted that our discussion of innovations is neither comprehensive nor systematic in a scientific sense. Instead, we are trying to identify emerging trends and to provide information about some of the new and creative interventions that are being implemented and evaluated.

This project also builds on and expands work that the authors have been conducting in tobacco research for many years. In that sense, this report represents a synthesis of some of our prior research as applied to youth tobacco use. That research will be referred to at appropriate points in this book.

Background

In recent years, several outstanding books have been published that document the history of the tobacco industry and various attempts to control the health harms produced by tobacco use. For example, Richard Kluger's monumental history chronicles how the industry attained its prominence and how the public health community has responded to growing evidence associating tobacco use with myriad health hazards.⁸ In the following sections, we provide a general overview of the tobacco story.

The Nature and Magnitude of the Health Consequences of Tobacco Consumption

A prominent article published in 1993⁹ compared the leading disease causes of death with "the actual causes of death" (i.e., those health risk behaviors and environmental exposures that can lead to illness and ultimately death). Accounting for 1.1 million annual deaths among Americans, half of all mortality, these "actual causes" represent the principal challenge to public health in the twenty-first century. Topping the list was tobacco consumption, the source of nearly one-fifth of all deaths among Americans.

Almost single-handedly, smoking has transformed lung cancer from a virtually unknown disease at the turn of the twentieth century to the leading cause of cancer death at its conclusion. Including mortality associated with environmental tobacco smoke and with interactions with other exposures (especially radon), smoking is responsible for more than 90 percent of the lung cancer deaths that befall Americans each year. Smoking is also the leading cause of chronic obstructive pulmonary disease mortality, accounting for at least 85 percent of deaths attributable to emphysema and chronic bronchitis. Although smoking accounts for only 17 percent to 30 percent of cardiovascular disease deaths, the dominance of heart disease as the leading disease cause of

death accords this illness its dubious status as a contender, with lung cancer, as the chief tobacco-produced source of mortality. In addition to the “big three,” smoking contributes to a host of less common causes of death, and it creates an enormous burden of preventable morbidity and disability.¹⁰

The enormity of the toll of smoking stems from a combination of the widespread prevalence of the behavior (more than 45 million Americans smoke), its intensity (smokers take 10–12 puffs per cigarette on an average of more than 25 cigarettes per day), and the chemical composition of the smoke inhaled (over 4,000 chemicals, including tobacco-specific nitrosamines, ammonia, formaldehyde, naphthalene, carbon monoxide, hydrogen cyanide, arsenic, benzo(a)pyrene, and polonium 210); 43 of the chemicals are known human carcinogens.¹¹ Over a typical smoking “career” of 50 years, a lifelong smoker inhales these 4,000 chemicals 4 to 5 million times. Given such exposure, it is perhaps nothing short of remarkable that an estimated one-half of lifelong smokers do not die as a consequence of the behavior. Indeed, there may be no more impressive testimony to the strength of the human organism.

However, considering its burden on the other half of the smoking population, this chemical onslaught has taken a toll unparalleled in the course of human history. In the United States, the toll will subside over time, a reflection of a gradual and continuing decline in smoking rates dating from the 1960s. The prevalence of smoking has dropped from approximately 45 percent in 1963, the year prior to publication of the first surgeon general’s report on smoking and health,¹² to 25 percent in 1997.¹³ Among men, smoking prevalence has been cut in half. Despite a rising population, total cigarette consumption in the United States has fallen from 633 billion cigarettes in 1981 to 479 billion in 1997. Adult per capita cigarette consumption—a common measure of consumption that adjusts for population growth—has fallen almost annually since 1973.¹⁴ Based on projections of the demographics of smoking, even in the absence of stronger tobacco control education and policy than exist at present, and assuming no change in youth initiation of smoking, prevalence should continue to fall in the United States over the next two decades or so, “bottoming out” at around 18 percent of adults.¹⁵ But even at these diminished prevalence levels, the toll of smoking will remain substantial throughout at least the first half of the new century.

Children, as well as adults, are at increased risk of tobacco-produced disease both from smoking and from exposure to environmental

tobacco smoke (ETS). Each day, about 3,000 children begin smoking cigarettes. With regard to adolescent tobacco use, the harms are not immediately evident. Aside from shortness of breath and coughing spells, most diseases attributable to tobacco use are latent, that is, not obvious until two or three decades later. Because nicotine, one of the active ingredients in tobacco, is strongly addictive, adolescents who regularly smoke cigarettes find it hard to quit, thus significantly increasing their chances of suffering some type of tobacco-related disease.

ETS exposure in the home is an important predictor of increased morbidity in children. Children exposed to secondhand smoke had more annual days of restricted activity, bed confinement, and school absence than did children not exposed to ETS.¹⁶ As many as 300,000 children under the age of three suffer from lower respiratory tract infections each year as a result of ETS exposure.¹⁷ Other problems include an increased prevalence of chronic middle ear disease, up to 26,000 new cases of asthma annually, and increased prevalence of sudden infant death syndrome (SIDS).¹⁸

Still, the achievements of America's "antismoking campaign," dating from publication of the 1964 surgeon general's report, rank tobacco control among, and perhaps at the top of, the major public health success stories of the second half of the twentieth century.¹⁹ The consumption declines previously described suggest the magnitude of the shift in smoking behavior since the early 1960s, but in fact they considerably understate the extent of the accomplishments. In the absence of the then new knowledge about the dangers of smoking, as well as the publicizing of it that constituted the heart of the early antismoking campaign, smoking prevalence almost certainly would have continued to climb, reflecting the rapid rise of smoking rates among women. It is certainly plausible, even probable, that total smoking prevalence would have exceeded 50 percent by the end of the 1960s or early 1970s. Adult per capita cigarette consumption would have exceeded 6,000 cigarettes per year, compared to 4,345 in 1963—the highest level ever attained in the United States—and 2,333, today's figure. According to one analysis, the first two decades of the antismoking campaign should be credited with avoiding nearly 3 million premature deaths through the year 2000.²⁰

Reflecting on America's tobacco control victories when juxtaposed against the enormity of the continuing problem, one can consider America's situation as either a cup half full or a cup half empty. The picture for the rest of the world is far bleaker. The World Health Organization predicts that today's global smoking population of 1.1 billion

will mushroom to 1.6 billion by the year 2030. By then, tobacco will have become the leading cause of death in developing countries as it is today in developed countries. Currently the cause of 4 million deaths per year worldwide, tobacco will kill 10 million of the globe's citizens annually beginning near the end of the third decade of the twenty-first century.²¹ No other behavioral, environmental, or biological cause of death will come close.²²

The magnitude of America's continuing tobacco-produced death toll, combined with the success of the nation's multifaceted smoking control endeavors, make tobacco control an excellent candidate for examining why a comprehensive approach to disease intervention is essential. Lessons from the tobacco story certainly have relevance to other health behavior dilemmas within the United States, and they generalize to other countries' efforts to come to grips with their own emerging and existing epidemics of tobacco-produced disease.

The Development of Smoking as a Normative Behavior

While American public health leaders like to fantasize about a "tobacco-free" country, the prospects for eliminating tobacco from the list of primary causes of morbidity and mortality verge on the nonexistent in the foreseeable future. The fascinating history of tobacco use, eloquently related by Goodman and others,²³ demonstrates the viselike grip that tobacco and nicotine, its principal dependency-forming constituent, have long held on the members of all societies exposed to "the golden leaf." The earliest recorded evidence of tobacco use in the Americas dates from the ninth century, and in the intervening 1,000-plus years, people have developed an extraordinary array of methods of consuming tobacco, including as a suppository for medicinal purposes. In India at present, tobacco is consumed in about a dozen distinct forms by millions of people.²⁴ Although the principal early purposes of tobacco use were medicinal and religious, history reveals evidence of social use, multiple times per day, in several North American tribes in the early years of the second millennium.

Tobacco use spread rapidly throughout Europe and Asia beginning in the sixteenth century, when explorers of the New World first brought tobacco back. So potent was the hold of nicotine that smokers defied official prohibitions of its use. Most notably, in the late sixteenth century, Sultan Murad IV of Turkey declared smoking punishable by beheading or being drawn and quartered, yet thousands of Turks per-

sisted in inhaling the intoxicating fumes and, in many cases, suffering the consequences. This experience is more than an interesting historical footnote. It demonstrates that official tobacco control policies have existed for centuries and that tobacco smoking has persisted in the face of far more draconian penalties than any contemplated today. One might credit Murad IV not only as the first government official to develop tobacco control policy but also, through its enforcement, as the first person to prove that smoking was hazardous to health.

Thus, suspicions about the dangers of smoking have existed for at least four centuries. In 1604, writing in a document entitled *Counterblaste to Tobacco*, King James I of England called smoking “ a custome lothsome to the eye, hatefull to the nose, harmefull to the braine, dangerous to the Lungs and in the blacke stinking fume thereof, nearest resembling the horrible Stigian smoke of the pit that is bottomelesse.”²⁵

Despite this early insight, true scientific understanding of the hazards is a strictly twentieth-century phenomenon, primarily dating from the second half of the century.²⁶ In large part, this reflects the fact that smoking became a widespread threat to health beginning only in the second decade of the twentieth century, with the refinement of the easy-to-inhale cigarette. Prior to 1913, the harsh tobaccos used in cigarettes made cigarette smoking a minor form of tobacco consumption. Cigars, pipes, snuff, and chewing tobacco dominated the tobacco market. Rarely inhaled deeply and frequently, these forms of tobacco consumption, although hazardous to health, posed only a minor risk compared to that which would become associated with cigarette smoking.

In 1913, Camel cigarettes introduced the “American blend” of tobaccos, a combination of flavorful tobaccos imported from Turkey and Egypt with milder American tobaccos that permitted deep inhalation for the first time. Camel also introduced what is widely regarded as the field’s first modern advertising campaign. The pairing of flavor and ease of inhalation with creative advertising has been credited with inaugurating the modern era of the cigarette.²⁷ Other factors that contributed to the rapid emergence of cigarette smoking included the relatively low cost of the new cigarettes, the addictiveness of easily inhaled nicotine, and the convenience of packaged cigarettes: in an increasingly harried daily life, tobacco users appreciated the ease and brevity of the cigarette smoking experience. The latter constituted a principal reason why cigarettes were included in soldiers’ rations in World War I and in every war thereafter until the Gulf War. Before the Gulf War, the mili-

tary also made cigarettes available through the commissary at significantly reduced prices.

Previously considered effeminate, cigarette smoking was converted into a normative behavior among males by the return to America of tens of thousands of newly addicted soldiers. Through effective marketing, the cigarette manufacturers managed to associate smoking with athleticism and romance. A veritable *Who's Who* of baseball stars, such as Lou Gehrig and Joe DiMaggio, advertised cigarettes widely. Smoking became *de rigueur* in seduction scenes in the movies, epitomized by the cigarette dangling from Humphrey Bogart's lips whenever he was sweet-talking an attractive lady in one of his films. In the 1950s, America's most respected newsman, Edward R. Murrow, chain-smoked his way through his television news and commentary broadcasts.²⁸ When the cohort of men born in the decade 1911–20 reached their age of peak smoking prevalence—in their late twenties to middle thirties—fully 70 percent smoked cigarettes. As recently as the early 1960s, more than half of adult males smoked.²⁹

In contrast, at no time did a majority of women smoke. Smoking by women was considered socially unacceptable during the first two to three decades of the century and “daring” thereafter until World War II opened the “man's world” to women (e.g., with so many men overseas fighting, women began working in factories in large numbers). The cigarette industry exploited the image of smoking as *risqué* in multiple ways. In early cigarette ads, women urged their male companions, who were smoking, to “blow some my way.” In a precursor to the “liberated woman” advertising campaign for Virginia Slims in the late 1960s, ad agencies staged marches through downtown New York with defiant women smoking. Through such techniques, the agencies tried to link smoking by women to the suffragette movement.

By the 1940s, women were beginning to smoke in large numbers. Indeed, it is striking to note that in four 10-year birth cohorts of women, those born from 1901 to 1940, all reached their rates of peak smoking prevalence within the single five-year period of 1958–63. For the oldest of the four cohorts, born during the century's first decade, this meant that their tobacco use peaked at an average age of 52.5.³⁰ (By comparison, women born from 1951 to 1960 achieved their peak prevalence in 1976, at an average age of 20.5.) From the 1930s through the early 1960s, the diffusion of smoking among women was paralleling that experienced among men approximately three decades earlier. Unlike men,

however, women's smoking prevalence peaked at about a third. The growth of smoking among women was interrupted by the advent of the national antismoking campaign, inaugurated in January 1964 with publication of the first surgeon general's report.³¹

The antismoking campaign has never been a single "campaign" in the conventional sense. Rather, it has consisted of an unorchestrated mix of varied private and public sector efforts, first, to educate the public about the hazards of smoking and, subsequently, to protect nonsmokers from exposure to environmental tobacco smoke. As one indication of the overall impact of the campaign, consider the subtle shift in the norms surrounding the act of smoking. In the middle of the century, it was considered impolite to light a cigarette without offering one to companions. Beginning in the 1970s, however, the question asked by a smoker contemplating lighting up switched from "Would you like a cigarette?" to "Do you mind if I smoke?" By the 1990s, in many social circles, the latter question had been mooted by the expectation that the answer would be "Yes." Even before then, antismoking advocates had adapted the latter question into the colloquy "Do you mind if I smoke? Do you mind if I die?" Today, many smokers generally ask nothing and refrain from smoking in the presence of nonsmokers.

Who Smokes and Why?

Although our primary focus in this book is on children, it is useful to understand general adult smoking patterns for comparison purposes. In 1995, 24.7 percent of adult Americans were smokers, down from a high of 42.4 percent in 1965.³² A larger percentage of men smoke than do women (27.6 percent and 22.1 percent, respectively), but the gap between the two genders has declined gradually over time. Racial and ethnic differences in smoking prevalence are substantial, ranging from 16.9 percent for Asians/Pacific Islanders to twice as much, 34.1 percent, for American Indians and Alaskan Natives. Race/ethnicity and gender differences in smoking prevalence are presented in table 1.

Race/ethnicity prevalence differences mask other differences in smoking behaviors that affect disease outcomes. More African American males smoke than do white males, but African Americans smoke fewer cigarettes per day. Possibly mitigating the potential health advantage of lower daily consumption is African Americans' preference for mentholated cigarettes, believed to have an anesthetizing

effect on the throat, which may lead to deeper inhalation. Menthol may also contribute to a higher rate of addiction.³³

Smoking rates vary substantially by age, with prevalence declining in the fourth and subsequent decades of life. In the older ages, differential death rates for smokers and nonsmokers account for a significant fraction of the prominent decrease in smoking prevalence.³⁴ Smoking cessation, the principal determinant of the decline in prevalence with age, rises significantly with age. Cessation rates appear to have leveled off during the 1980s and early 1990s, with concern that they may actually have fallen in the late 1990s.

A real challenge to students of the demographics of smoking is assessing smoking initiation, a phenomenon that occurs almost exclusively during childhood and adolescence. Much concern has been expressed about the documented increase in 30-day smoking prevalence among eighth, tenth, and twelfth graders during the first half of the 1990s, a trend that has, fortunately, reversed in the most recent years. In the 1999 Monitoring the Future survey, 34.6 percent of high school seniors had smoked within the past 30 days, down from nearly 37 percent in 1996. The comparable 1999 figures for tenth and eighth graders are 25.7 percent and 17.5 percent.³⁵ Troubling, however, is the question of how one should assess “smoking” by children; while 30-day prevalence rates were rising during the 1990s, measures of regular and heavy smoking (e.g., half a pack or more per day) were not.

Data on youth smoking also raise perplexing questions about racial and ethnic differences. Most notably, the rates of smoking by African American students were dramatically lower than those for whites, although the gap has narrowed in recent years. Yet smoking rates among young adult African Americans often exceed those of comparably aged whites. The difference is explained, in part, by lower quit rates among African Americans.

TABLE 1. Smoking Prevalence (Percentage) by Gender and Racial/Ethnic Group

Race/Ethnicity	Male	Female	Total
White, non-Hispanic	27.4%	23.3%	25.3%
Black, non-Hispanic	32.1%	22.4%	26.7%
Hispanic	26.2%	14.3%	20.4%
American Indian/Alaskan Native	37.9%	31.3%	34.1%
Asian/Pacific Islander	21.6%	12.4%	16.9%
Total	27.6%	22.1%	24.7%

Source: CDC 1999b.

A large majority of children experiment with smoking, yet fewer than half go on to become regular smokers. As we discuss in chapter 2, social scientists attribute much of the propensity to experiment with tobacco, as well as the propensity to become a regular smoker, to the influence of peer and parental behavior. It is widely believed, for example, that the children of smokers are twice as likely to smoke as the children of nonsmokers (but the data from multiple studies are not uniformly consistent in finding a significant association).³⁶ There are important socioeconomic and educational links as well: in the United States, as in most developed nations today, smoking is increasingly becoming a marker for lower socioeconomic status.³⁷

Clearly, the preeminent determinant of smoking dependency in a given individual is addiction to nicotine. A wealth of evidence from biology, brain chemistry, and sociology indicts nicotine as a classic addictive substance.³⁸ Ironically, when the surgeon general observed in 1988 that nicotine was as addictive as heroin and cocaine, he may have been understating the case in one important respect: of all the dependency-forming substances of abuse, nicotine likely addicts the largest proportion of its users. But the question remains as to why some people can take it or leave it, while others find themselves incapable of renouncing its use. Intriguing clues are emerging from the rapidly developing field of genetic science. Recent research offers provocative evidence of a genetic explanation for as much as half of the propensity to become a smoker and half of the apparent inability of some smokers to quit.³⁹

That the social context in which smoking occurs affects the amount and nature of smoking is evident in the literature on children's role modeling.⁴⁰ Intriguing new evidence on contemporary patterns of adult smoking illustrates just how influential societal norms can be. A change in the questions asked by the National Health Interview Survey (NHIS) in 1992 to determine smoking status permitted analysts to assess how many people smoke cigarettes on a nondaily basis. The conventional wisdom among experts on smoking had always been that only 5 percent or so of smokers were "chippers," "recreational" smokers who consumed only a few cigarettes per day or smoked on a nondaily basis. The NHIS data indicate that close to a fifth of all smokers do not smoke every day. Multiple possible explanations may be offered, yet there is widespread agreement that the movement to expand clean indoor air laws, prohibiting smoking in many public places and workplaces, likely has redefined smoking for a subset of

smokers. These smokers have learned how to “survive” in a smoking-hostile environment by restricting their smoking to locations, and days, when it is acceptable.

This shift in the social environment in which smoking takes place is but one example of the determinants of smoking that lend themselves to conscious collective intervention. Another, of great concern within the tobacco control community, relates to the marketing of cigarettes and other tobacco products. It is an article of faith within the tobacco control community that advertising and, increasingly, other forms of marketing (ranging from sports sponsorship to distribution of paraphernalia related to cigarette brands) seduce youngsters into experimenting with cigarettes and keep hooked adults who otherwise would quit. The weight of the evidence supports this view, but there is no “smoking gun” that demonstrates it conclusively.⁴¹ One study shows a relationship between the number of promotional items owned and smoking behavior (i.e., the more cigarette promotional items owned, the greater the likelihood of smoking).⁴² Otherwise, the empirical evidence on the issue is mixed.⁴³

Nevertheless, it is clear that the marketing of tobacco products is a major front in the war on smoking; notable tobacco control victories have been realized within the past few years, most recently the result of the multistate settlement concluded between the state attorneys general and the tobacco industry.⁴⁴ As a consequence of that settlement, tobacco billboards have disappeared and human subjects and cartoon characters will no longer grace the pages of cigarette ads. We discuss the specific terms of the settlement and how it came about in chapter 1.

The Objectives of Tobacco Control

Tobacco control policy has three principal objectives, all directed toward avoiding the enormous burden of disease wrought by tobacco use.

- Preventing the initiation of tobacco use by young people (the primary focus of this book)
- Helping smokers (this objective is focused mostly on adults) to quit using tobacco (or at least to reduce their risk)
- Protecting nonsmokers from the annoyance and risk posed by environmental tobacco smoke.

These three objectives are distinct in concept, though realization of any one of them (partial or complete) will often affect one or both of the other objectives.

In principle, proponents of tobacco control should and do support all three objectives. In practice, however, a vigorous national debate has emerged pitting advocates for a youth prevention focus (the first objective) against those who insist on a more comprehensive strategy, one devoted more centrally to preservation of clean indoor air (the third objective) and more explicitly to helping adult smokers quit (the second objective). We will turn to that debate in chapter 1.

To achieve these three objectives, all tobacco control (and indeed other public health) interventions can be classified into one of three broad categories, with differing levels of coerciveness (i.e., the degree to which they force behavior change): education and information interventions, incentives, and laws and regulations. Subsequent chapters will discuss each type of intervention in relation to youth smoking.

The first category, education and information interventions, encompasses all activities designed to inform the public about hazards or benefits to health and/or to persuade people to take health-enhancing behavioral action. In the case of tobacco control, disseminating the findings published in the surgeon general's reports on smoking and health educates the public about the dangers of smoking (and passive smoking) or the health benefits of quitting. Media "counteradvertising" campaigns attempt to persuade young people or adults to avoid tobacco use. Warning labels on cigarette packs and ads are intended to inform about dangers and, implicitly, to discourage use.

The second category, incentives, refers primarily to economic inducements to avoid tobacco. The most obvious and important example is an increase in a cigarette excise tax, driving up the price of cigarettes and thereby discouraging cigarette purchases by individuals who "feel the bite" of the higher price in their wallets. Other examples include differential life insurance rates (you pay more for given coverage if you smoke than if you do not) and explicit smoking cessation incentives, such as employers' rewarding workers who do not smoke with pay bonuses.⁴⁵

The final category, laws and regulations, refers to explicit, legally binding requirements to do, or not do, something pertaining to tobacco consumption. Most notable here are clean indoor air laws, which prohibit smoking in public places, and laws stipulating minimum age of

purchase, which forbid vendors from selling cigarettes to minors and minors from buying them.

Definitions

Throughout this book, we use certain terms to define various stages of smoking behavior. Despite the vast literature on all aspects of tobacco policy, there is no standard set of definitions for commonly used terms, such as *smoking*, *smoking initiation*, or *regular tobacco use*. While the concepts surrounding these terms are generally well understood and accepted, agreement on precise definitions is elusive. In part, this is because individual smoking patterns differ widely. One person might smoke only on weekends, while another might smoke more often but consume fewer total cigarettes. In subsequent surveys, however, one might be classified as a regular smoker, the other only as a current smoker. Thus, there is some inconsistency on what constitutes a smoker, even if the long-term patterns are unaffected by short-term definitional disparities. The 1994 surgeon general's report focuses on the number of days smoking in the past month and the number of cigarettes per day.

For this book, we use the following definitions: *Experimentation* means taking occasional puffs on a cigarette. An *ever-smoker* is anyone who has ever smoked. (Some researchers define ever-smokers as individuals who reported that they had smoked at least 100 cigarettes in their lifetime.⁴⁶ This seems too high a threshold.) A *current smoker* is someone who has smoked one cigarette within the past 30 days. A *non-smoker*, whom we define as someone who has not smoked even one cigarette within the past 30 days, is different from a *never-smoker* (someone who has never experimented).

Since we are concerned with what leads adolescents from first use to more regular smoking and patterns of tobacco use, we are not particularly concerned with random experimentation. We are far more concerned with *smoking initiation*, which we define as a process of moving along a continuum toward becoming a heavy tobacco user. In our approach, the term *initiation* implies some intent to continue smoking, even if not on a daily basis. In this sense, our use of the term *initiation* differs from the terms presently being used. Many surveys define *current smoking* as smoking one cigarette within the past 30 days. Because

the definition of current use is now common, we follow that convention, even though we do not necessarily agree that this definition represents current smoking.

By *regular smoking*, we mean that someone has smoked cigarettes in 20 out of the past 30 days. *Daily smoking* means that someone averages one or more cigarettes per day, and *heavy smoking* is defined as consuming more than half a pack per day.

Throughout the book, such terms as *cigarette smoking*, *tobacco consumption*, and *tobacco use* are used reasonably interchangeably. Unless the context dictates otherwise, the reader should interpret references to smoking as applying generally to other forms of tobacco use as well. (An example of a context that precludes generalization is discussion of laws that prohibit smoking in public places. Clearly this would not apply to use of smokeless tobacco.) Cigarette smoking (or just smoking) is referred to specifically in many instances primarily because it is far and away the most important source of tobacco-produced disease.

Finally, the terms *adolescent smoking* and *adolescent tobacco use* are used frequently. By *adolescent*, we mean the age-group between 12 and 17 years of age. *Preadolescents* constitute ages 11 and below. *Young adults* are those between 18 and 24 years old.

NOTES

This chapter borrows liberally from Warner 2000b. We appreciate the Institute of Medicine's permission to use this material.

1. FDA 1996.
2. IOM 1994; USDHHS 1994.
3. Because most of the programs discussed in part 2 operate to prevent adolescent tobacco use, we have segmented the chapters along common themes for the readers' convenience.
4. USDHHS 1994.
5. IOM 2000.
6. CDC 1999j.
7. CDC 2000a; National Cancer Policy Board 2000.
8. Kluger 1996. For a libertarian perspective on these issues, see Sullum 1998.
9. McGinnis and Foege 1993.
10. USDHHS 1989; Napier 1996.
11. USDHHS 1989.
12. USDHEW 1964.
13. CDC 1999b.
14. Tobacco Institute 1998.

15. Mendez and Warner 1998.
16. Mannino et al. 1996.
17. EPA 1993. See also California EPA 1997.
18. Brownson et al. 1997.
19. CDC 1999a.
20. Warner 1989.
21. World Bank 1999.
22. Murray and Lopez 1996.
23. Goodman 1994; Wagner 1971; Kluger 1996.
24. Bhonsle, Murti, and Gupta 1992.
25. As quoted in Wagner 1971, 11.
26. USDHHS 1989.
27. Tilley 1985.
28. As a sad footnote, both Bogart and Murrow died of lung cancer in their fifties, along with a plethora of other prominent smokers from the era.
29. Warner 1986.
30. Warner 1986.
31. Warner and Murt 1982.
32. CDC 1998b; NHIS 1999.
33. Ramirez and Gallion 1993.
34. Harris 1983.
35. MTF 1999.
36. USDHHS 1994.
37. USDHHS 1989.
38. USDHHS 1988; Henningfield, Cohen, and Pickworth 1993.
39. Pomerleau 1995.
40. USDHHS 1994; IOM 1994.
41. USDHHS 1989.
42. Sargent, Dalton, and Beach 2000. This is known as a dose-response relationship.
43. Chaloupka and Warner 2000.
44. National Association of Attorneys General 2000.
45. Warner and Murt 1984; USDHHS 1989.
46. Douglas and Hariharan 1994.

