Chapter 14
Current Status of Tobacco Control

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Introduction

The overall purpose of this chapter is to identify the tobacco control measures that have worked up to now as the basis for subsequent considerations in Chapters 15 and 16 ("The Changing Landscape of Tobacco Control: Current Status and Future Directions" and A Vision for Ending the Tobacco Epidemic: A Society Free of Tobacco-Related Death and Disease," respectively), which look forward to how to reduce and even end the tobacco epidemic. Previous Surgeon General's reports on smoking and health have articulated a vision for ending the tobacco epidemic through a variety of methods, including sustained use of successful interventions, a comprehensive approach, and continued support to build the scientific foundation for action (U.S. Department of Health and Human Services [USDHHS] 2000, 2004, 2006, 2010, 2012). Recent recommendations made by expert groups also emphasize comprehensive coordinated approaches to reducing tobacco use and its harms (Bonnie et al. 2007; USDHHS 2010; World Health Organization [WHO] 2008b). The potentially relevant literature is vast and, consequently, coverage in this chapter is analytic and synthetic without providing an exhaustive review of all relevant evidence (supporting reviews are provided online at www.surgeongeneral.gov in Appendices 14.1–14.5).

This chapter first considers the shifting public image of tobacco use during the past 50 years, which has been critical to driving the decline of tobacco smoking (see Chapter 2, "Fifty Years of Change 1964–2014"). Tobacco use has serious economic and social implications for the population, and is intimately tied to collective images and attitudes that can positively or negatively impact use. As scientific knowledge about the disease effects of smoking has advanced, and as research on tobacco industry documents and litigation have uncovered the deceptive and covert activities of tobacco companies, attitudes toward tobacco use and smoking in public places have changed from accepting to increasingly unfavorable.

In the second part of this chapter, the changing nature of tobacco products is reviewed and a brief overview is provided of current efforts to regulate tobacco manufacturing, marketing, and use. Tobacco and other commercial tobacco products that contain nicotine cover a wide range, including not only conventional cigarettes, cigars, and smokeless tobacco but dissolvable tobacco products (DTPs), electronic delivery systems, low nitrosamine smokeless tobacco, and water pipes. The emergence of such new products has become increasingly germane to the formulation of tobacco control policies.

The third section covers two key tobacco control measures—tobacco taxes and clean indoor air laws, which both have a large span and size of population impact (USDHHS 2000). Other legal strategies, including restrictions on advertising and access to tobacco by minors, are also briefly reviewed. It concludes with a brief review of litigation as a tobacco control strategy.

The fourth section in this chapter focuses on clinical, educational and community-wide strategies and approaches for tobacco cessation. It reviews the evidence that tobacco use is a chronic condition of addiction with remission and relapse, requiring repeated interventions and, often, multiple attempts to quit successfully for the long-term. A series of interventions and treatments are briefly reviewed, including counseling, quitlines, and medications. Approaches for tobacco dependence treatment through the health care delivery system are also reviewed (e.g., a national network of quitlines, supporting the "5A's model").

The comprehensive educational and community-wide strategies acknowledge that individual behavioral choices occur in a larger, complex context: a social setting of family, schools, community, and culture; a complex economic and physical environment; formal and informal government policies; and the prevailing legal atmosphere. The review covers a mix of programs developed as large-scale research and demonstration studies (e.g., the National Cancer Institute's [NCI's] American Stop Smoking Intervention Study [ASSIST], the Community Intervention Trial for Smoking Cessation [COMMIT]), and comprehensive state programs often carried out by state and local public health agencies.

The final section of this chapter briefly reviews international tobacco control activities and related issues, including trade policies.

The Changing Public Image of Tobacco

The level of social acceptability of smoking was a major contributing factor in the rising prevalence of smoking up to the middle of the twentieth century, and then to the declining prevalence of smoking during the past 50 years (Cummings 2009). The importance of the changing public image of tobacco is discussed in greater detail in Chapter 2, as well as in previous Surgeon General's reports (U.S. Department of Health, Education, and Welfare [USDHEW] 1979; USDHHS 2000, 2006, 2012), and in several histories of tobacco control (Kluger 1996; Brandt 2007; Proctor 2011).

When the first Surgeon General's report was issued in 1964, up to 60–70% of young and middle-aged men were current smokers, and almost 50% of young women were smokers as well (see Chapter 13, "Patterns of Tobacco Use Among U.S. Youth, Young Adults, and Adults," Figure 13.9A and 13.9B). In the 1960s and even into the 1970s and 1980s, smoking was permitted nearly everywhere—smokers could light up at work; in hospitals, school buildings, bars, and restaurants; and on buses, trains, and airplanes. In the mid-1960s, the culture of smoking was so accepted that even the Surgeon General's Advisory Committee had ashtrays on the table, when they met to discuss the evidence that would eventually conclude that cigarette smoking is a cause of cancer and other life-threatening diseases (Figure 14.1).

For anyone growing up in the 1950s and 1960s, it was common to see doctors; athletes; radio, movie, and television celebrities; and popular cartoon characters advertising various cigarette brands (Figure 14.2). In fact, the marketing of cigarettes was so commonplace that the 1967 Federal Trade Commission (FTC) report commented "…that it is virtually impossible for Americans of almost any age to avoid cigarette advertising" (FTC 1967). In 1964, tobacco companies were major sponsors of popular television shows on all three television networks (Pollay 1994). These companies also arranged for product placements in movies, and other entertainment media, to increase the social image of smoking as popular, sophisticated, and classy (Mekemson and Glantz 2002; USDHHS 2012). As reviewed in previous reports, the tobacco companies have viewed the movie industry as an opportunity for advertising as far back as the Nickelodeon era when movies were silent, cost only a nickel, and ad slides played between reels (USDHHS 2012).

Although comprehensive historical tracking of portrayals of tobacco use in U.S. films is only available since 2002, a study of a random sample of major movies released between 1950–2002 found that smoking incidents declined from 10.7 incidents per hour in 1950 to a minimum of 4.9 in 1980–1982 but increased to 10.9 in 2002 (see USDHHS 2012, Figure 5.11). Despite declining

Figure 14.1 Meeting of the 1964 Surgeon General's Advisory Committee

Source: © Fred Ward-1964-www.AwardAgency.com

Figure 14.2 Cigarette advertisements

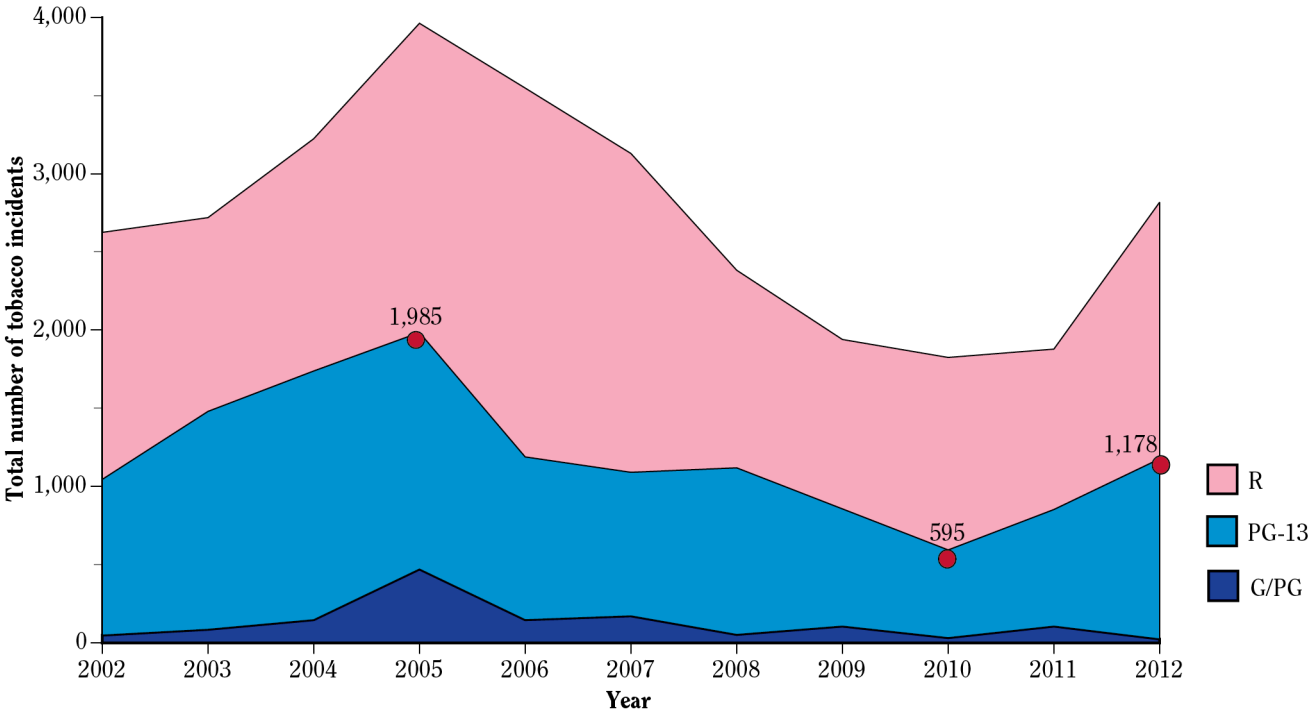
Source: Richard Pollay Tobacco Advertising Collection at Roswell Park Cancer Institute, Buffalo, NY.

tobacco use and increasing public understanding of the dangers of smoking in the real world, by 2002 smoking in movies had returned to levels observed in 1950, when smoking was nearly twice as prevalent in reality as it was in 2002 (Glantz et al. 2004). Beginning in 2002, Thumbs Up Thumbs Down!, a project of Breathe California of Sacramento-Emigrant Trails, has collected data on every film that was in the Top 10 theatrical box office for at least 1 week (which includes 83% of all films released in the United States and 96% of tickets sold) (Centers for Disease Control and Prevention [CDC] 2011c; Polansky et al. 2012). These data show that the number of tobacco incidents increased between 2002–2005, then declined from 2005–2010 and rebounded in 2011 and 2012 (Figure 14.3A).

Based on these data on tobacco incidents, population exposure to smoking incidents in movies can be estimated from box office attendance data (one impression equals one tobacco incident on screen viewed by one audience member one time) (CDC 2011c; Polansky et al. 2012). Theatrical impressions substantially underestimate total exposure because they include only in-theater exposure, not viewing on home media: broadcast, cable, satellite, and on-demand; on DVD and Blu-ray and on streaming media. Youth-rated movies delivered 20.4 billion impressions to domestic theatrical audiences in 2005 (Figure 14.3B). This exposure dropped by 73%, to 5.5 billion in 2010, then rebounded to 14.9 billion impressions in 2012. Of the youth-rated impressions that year, 99% (14.8 billion/14.9 billion) were delivered by PG-13 movies. While R-rated films on average include more smoking than PG-13 films, youth are much less likely to view R-rated films than PG-13 films; as a result, youth receive about three times the absolute exposure to smoking images from PG-13 films than R-rated films (Sargent et al. 2012). In 2012, impressions delivered by youth-rated movies comprised 56% (14.9 billion/26.5 billion) of all in-theater tobacco impressions (Polansky et al. 2012).

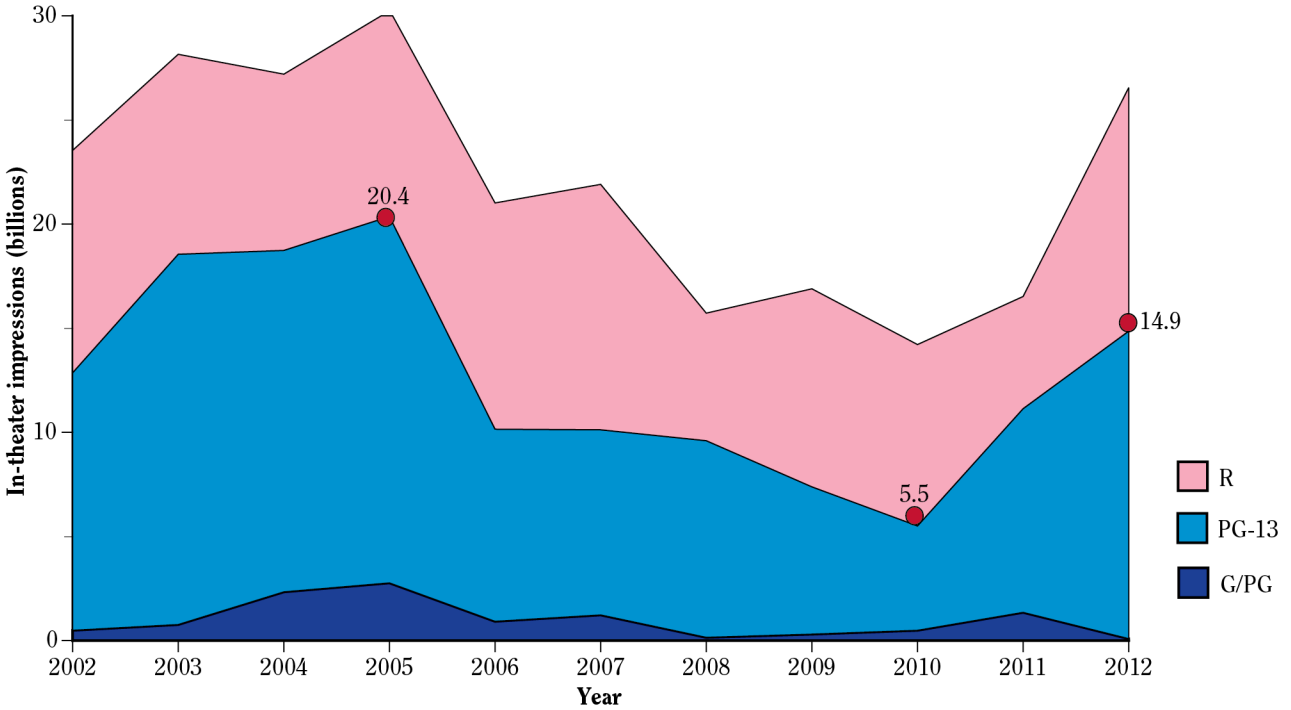
The 2012 Surgeon General's report concluded that there is a causal relationship between depictions of smoking in movies and initiation of smoking among young people (USDHHS 2012). The report based this conclusion on a large body of epidemiologic, behavioral, and experimental data. Subsequently, additional evidence shows a dose-response relationship between frequency of exposure to onscreen smoking images in movies and increased risk of smoking initiation (Dal Sin et al. 2011; Hanewinkel et al. 2012; Sargent et al. 2012; Morgenstern et al. 2011, 2013a, b). Additionally, based on the actual mix of films that adolescents viewed, it has been estimated that reducing in-theater exposures from a current median of about 275 annual exposures per adolescent from PG-13 movies

Figure 14.3A Total tobacco incidents in top-grossing U.S. movies, by Motion Picture Association of America rating



Source: Polansky et al. 2012.

Figure 14.3B Tobacco impressions[a] delivered by top-grossing U.S. movies, by Motion Picture Association of America rating



Source: Polansky et al. 2012.
[a]One impression equals one tobacco use incident on screen viewed by one audience member.

down to approximately 10 or less would reduce the prevalence of adolescent smoking by 18% (95% CI, 14–21%) (Sargent et al. 2012).

Reports on the health risks of cigarette smoking were published with increasing frequency from the 1920s, but it was not until the 1950s and 1960s that medical research on smoking and cancer began to receive widespread media attention and the public began to recognize the adverse consequences (see Chapter 2) (Brandt 2007). In a 1966 Harris poll, only 40% recognized smoking as a major cause of lung cancer, 27% considered it a minor cause, and one-third were uncertain, saying that "science has not yet determined the relation between smoking and lung cancer" (Saad 2002). One explanation for people not believing that smoking was a health risk is the aggressive actions of the tobacco industry in suggesting scientific uncertainty and controversy about the findings (e.g., the "Frank Statement" on smoking issued in 1954 [Pollay Advertising Collection, n.d.]) (Brandt 2007). Over time, the public's perception of smoking gradually shifted from viewing smoking as a minor health concern to increasing acceptance that there are serious health risks associated with smoking. Smoking became increasingly less acceptable as a social practice (Sadd 1998). In 2001, Gallup asked this question again and found that 71% of Americans identified smoking as a major cause of cancer, 11% said it was a minor cause, and 16% were unsure (Sadd 2002).

The first large-scale national counter-advertising campaign to educate the public about the health risks of tobacco use was launched in 1967, under the Fairness Doctrine, which required broadcasters to provide free media time for antismoking public service announcements in response to cigarette commercials (Cummings 2002). Several studies have concluded that the antismoking messages mandated by the Fairness Doctrine resulted in a sharp reduction in smoking, which rebounded after the antismoking ads went off the air in 1971, as a result of the broadcast advertising ban (O'Keefe 1971; Warner 1989; Simonich 1991). Beginning in 2000, the American Legacy Foundation launched the truth® campaign, a broadcast counter-advertising campaign which primarily targeted teens and young adults (Healton 2001). This extensively evaluated campaign was found to have been successful in creating a high level of awareness of its messages among the intended target audience, and to have been effective in discouraging youth from smoking (Farrelly 2002; Richardson et al. 2010). Additional evidence in support of the effectiveness of paid counter-advertising campaigns comes from the sharp declines in cigarette consumption observed in localities that have invested heavily in mass media campaigns (Farrelly et al. 2008; NCI 2008).

Smokefree Policies

Today, the adverse health effects of exposure to secondhand smoke are well understood, and firm causal conclusions have been reached on its risk to the health of nonsmokers (USDHHS 2006). The growth of laws regulating smoking in public locations such as schools, health care facilities, public transportation, government buildings, elevators, and restaurants has been a clear indicator of the changing social acceptability of smoking. However, in 1964, there were no laws regulating smoking in public locations. Evidence regarding the health consequences of exposure to secondhand smoke emerged in the 1970s and 1980s. This evidence supported the start of the nonsmokers' rights movement, which became a critical force in tobacco control efforts. This movement was largely responsible for motivating policies limiting where people could smoke (USDHHS 2006). Currently, federal laws prohibit smoking on buses, trains, and domestic airline flights. The U.S. military continues to extend the number of tobacco-free areas. In 1994, the U.S. Congress outlawed smoking in most of the nation's public schools and federally funded programs that serve children, including Head Start centers, day care centers, and community health centers (USDHHS 2000). In 1993, the Joint Commission on the Accreditation of Health Care organizations required hospitals to ban smoking indoors, but did not require restrictions on smoking in any other parts of the campus. By 1994, more than 96% of hospitals were smokefree, and 40% had tighter restrictions than were required (Institute of Medicine [IOM] 2013). By 2012, the majority of states and hundreds of individual communities in the United States had adopted comprehensive smokefree laws that prohibit smoking in nonhospitality workplaces, restaurants, and bars (CDC 2012c). Most hospitals, many private businesses, and hundreds of colleges and universities have now voluntarily prohibited tobacco use on their campuses, as a way to establish a smokefree norm that discourages people from using tobacco (CDC 2012d). The policies restricting where people can smoke have made cigarette use less socially acceptable and less convenient, and thus, have encouraged cessation and discouraged uptake of smoking (Gilpin 2004; Bauer 2005; Siegel 2008).

The progress in implementing comprehensive smokefree laws has been one of the major public health accomplishments since 1964; however, as reviewed later in this chapter, wide geographic, occupational, and demographic disparities remain and only about one in three residents of the United States lives under state or local laws that make worksites, restaurants, and bars completely smokefree (CDC 2008b, 2010).

Smoking in the Military

As discussed in Chapter 13, the males who were involved in World War II, or who were in adolescence during this era, initiated smoking at the highest rates and had the highest birth cohort prevalence of current smoking as young men. Smoking had been viewed as acceptable and even a positive in the U.S. military. As public opinion about smoking has changed and knowledge of the health effects of smoking has grown, tobacco control policies in the military have also changed. Appendix 14.1, online at www.surgeongeneral.gov, provides a more complete discussion of this topic.

During the past 50 years, the Department of Defense's (DoD's) stance on tobacco has markedly shifted. However, although tobacco use was supported in the middle of the twentieth century (e.g., mini-packs of cigarettes in ration accessory packs until 1975) (Smith et al. 2007) and tolerated well into the 1980s, the antitobacco use tide turned in the late 1990s as evidence of the immediate health and readiness consequences of smoking started to emerge. Cigarettes were banned from all military rations in 1975 (Smith and Malone 2009), and smoking was restricted in DoD facilities in 1977 (Executive Order No. 13058 1977). Between 1985–2001, both DoD and the U.S. Congress attempted to increase commissary cigarette prices, but these efforts were largely thwarted by the tobacco industry (Smith et al. 2007). Finally in 2001, DoD Directive 1330.9 established that tobacco prices on U.S. bases should be "no lower than 5 percent below the most competitive commercial price in the local community" (Smith et al. 2007, pp. 42–3). Even with this policy, a recent investigation of pricing differences between 145 matched Walmart stores and Military Exchanges found that the average retail price at an Exchange was 25.4% lower (Jahnke et al. 2011).

Despite the continued struggles with pricing, many DoD installations have expanded tobacco control policies extending the number of tobacco-free installations (Joseph et al. 2005). For example, the Air Force has prohibited tobacco use, virtually everywhere, on an Air Force installation with the exception of designated tobacco areas. Tobacco use outside of designated tobacco areas, including when walking outside of the designated tobacco areas, is prohibited (Air Force Instruction 40-102 2012).

Tobacco use is still prevalent in the military, despite the official DoD policy of strongly discouraging tobacco use, including prolonged and efficacious total tobacco bans during training (Klesges et al. 1999, 2006). However, the tobacco industry continues to reach this vulnerable military population by such methods as the placement of a coupon inside the cigarette carton when external coupons and/or promotions were prohibited (Stirlen 1994). Additionally, the industry has sent smokeless tobacco to Marines in Iraq, while maintaining that it was not a violation of the policy against distribution of free tobacco product samples, because they "responded to direct requests from troops" (Elliott 2003). Further, in response to tobacco advertising regulations, the tobacco industry has turned to promotional opportunities in adult-only venues such as bars and pubs (Katz and Lavack 2002), particularly those near military bases as stated in one marketing report, "...it seems the venues located in close proximity to the bases attract a large crowd of demographically desirable consumers" (National Field Report 1992).

Advocacy Efforts

As the public image of smoking and tobacco use has changed to become increasingly less favorable over the past half-century, advocacy efforts to restrict tobacco use have intensified. An extensive review of tobacco control advocacy was provided in Chapter 2, "A Historical Review of Efforts to Reduce Smoking in the United States" of the 2000 Surgeon General's report (USDHHS 2000). This chapter provides a short overview of some important milestones in tobacco control advocacy, which has played a critical role in motivating tobacco control at levels extending from local to national.

Many different groups have been active in tobacco control advocacy. Since 1964, the campaign to reduce smoking can be considered as "the entirety of changes in the social environment spawned by scientific and social interest in the hazards of smoking" (Warner 1989, p. 144); this movement covers not only specific activities, but also "the changing social norms that have accompanied them" (p. 144). Given this broad view, the span of activities involves persons, private organizations, and government agencies, all with different motivations: those ideologically committed to a movement to reduce smoking, those who operate profit-making businesses, those seeking public office, and those in public office who mandate laws and regulations. Critical contributions have come from national health organizations, public health and medical researchers, organized medicine through various professional organizations, government regulatory agencies and health departments, school officials, voluntary organizations in health, foundations, lobbying groups, private firms dealing with the health or insurance needs of employees, smoking cessation clinics, and individual medical practitioners.

These wide-ranging advocacy efforts, loosely organized and networked at best, faced the formidable challenge of opposing the responses of the well-funded and highly centralized tobacco industry. In an analysis of tobacco industry tactics, the Advocacy Institute defined nine areas of activity: intimidation, alliances, front groups, campaign funding, lobbying, legislative action, buying expertise, philanthropy, and advertising and public relations (Advocacy Institute 1996). In its discussion of well over 100 instances in these areas, which were documented largely from media reports, the Advocacy Institute (1996) does not accuse the tobacco industry of illegal activity, but rather, of far-ranging and systematic efforts to ensure the continued use of tobacco products. One critical advocacy effort for responding to these diverse industry counters to tobacco control has been tobacco industry denormalization. For example, a focus on the industry has been well integrated into the California Tobacco Control Program, since its inception as part of educating the public about disease risks (e.g., "The tobacco industry is making a killing off you"), and into several national youth nonsmoking campaigns. There is now considerable literature suggesting that denormalization has independent effects on reducing tobacco use (Malone et al. 2012).

Taken together, and backed by the enormous resources of the industry, efforts by the tobacco companies have had considerable impact in promoting tobacco use and slowing efforts to reduce or prevent it. Against this well-funded industry, advocacy efforts have played a critical role and proved effective in denormalizing smoking and portraying the truth about the industry and the dangers of its products. As described later in this chapter, other approaches have also proved effective in countering the tobacco industry, including litigation and enhanced awareness of the industry's efforts to mislead the public.

As public health efforts to discourage tobacco use evolved to become broader and stronger over the past half-century, the tobacco industry's strategies changed in parallel in an effort to sustain sales and protect its financial interests. To an extent, these efforts were successful; the companies continue to have millions of individual purchases every day of the year, with most consumers being brand-loyal, specifying a preferred brand by name (Maxwell 2010; FTC 2012). The summary of the 1981 FTC report documents the success of the industry's public relations efforts. The report found that by the early 1980s, although most Americans were generally aware that smoking was hazardous, many in the public, especially smokers, did not have sufficient information about the health risks of smoking to understand just how dangerous smoking was for them (Myers 1981). So egregious were the actions of the tobacco industry that U.S. District Judge Gladys Kessler found the companies guilty of violations under the *Racketeer Influenced and Corrupt Organizations* (*RICO*) *Act* (1994) (*U.S. v. Philip Morris USA, Inc.,* 449 F. Supp. 2d 1 (D.D.C. 2006)). In her findings of fact, affirmed on appeal, Judge Kessler concluded the evidence revealed that the companies had participated in a "scheme to defraud smokers and potential smokers in order to maximize their profits by preserving and enhancing the market for cigarettes, to avoid costly liability judgments, to derail attempts to make smoking socially unacceptable, and to sustain the cigarette industry" (*Philip Morris* 449 F. Supp. 2d at 852; *U.S. v. Philip Morris USA Inc.,* 449 F. Supp. 2d 1, 852 (D.D.C. 2006), *aff'd in relevant part by U.S. v. Philip Morris, Inc.,* 566 F. 3d 1095 (D.C. Cir. 2009 (per curiam)).

Changes in the Tobacco Industry, Products, and Product Regulations

In 1964, the evidence on tobacco and health focused on cigarettes since most tobacco users in the United States were cigarette smokers, and most tobacco consumption per person was in the form of cigarettes (USDHEW 1964). Subsequent reports of the Surgeon General were mandated by the U.S. Congress to address the health consequences of cigarettes. The rise of smokeless tobacco use in the 1970s and 1980s led Surgeon General C. Everett Koop to request a report on these products by the National Institutes of Health (NIH) (USDHHS 1986). The 2010 Surgeon General report provided some discussion of the changing tobacco industry and products (USDHHS 2010), but other than that report, most Surgeon General's reports on the health consequences of smoking have provided little discussion of the health effects of tobacco products other than cigarettes. The current report includes information on tobacco products other than cigarettes, because of the rapidly changing nature of tobacco products, trends

in new product use, and the tobacco industry itself, since the turn of the twenty-first century. Such information is becoming increasingly relevant to future tobacco control approaches, as the array of products is becoming increasingly diverse.

The tobacco industry's strategies have evolved, and are continuing to evolve, in ways that will influence attitudes towards it and the use of tobacco products. Over the past two decades, there have been several mergers and acquisitions of tobacco-related businesses in what may be a response to the new international regulations on tobacco products, a declining domestic cigarette market, and a growing international tobacco business. In 1994, the American Tobacco Company exited the tobacco business by selling off its cigarette brands to British American Tobacco (BAT). Starting in 1994, popular American brands such as Lucky Strike, Pall Mall, Carlton, and Misty were marketed in the United States by the BAT subsidiary, Brown & Williamson, which in 2004 was acquired by R.J. Reynolds (RJR) forming a new publicly-traded holding company called Reynolds American, Inc. (RAI). In 2008, RAI acquired Conwood Smokeless Tobacco Company and changed the name of the company to American Snuff Company. In 2009, RAI launched Camel Snus and, the following year, RJR introduced Camel DTPs. RAI also acquired the rights to market ZONNIC nicotine replacement products and purchased Niconovum AB, a Swedish company making oral nicotine replacement products. In 2003, Philip Morris changed its name to Altria and, in 2009, acquired U.S. Smokeless Tobacco Company. Shortly after, Altria began to market Marlboro Snus along with other smokeless tobacco products, such as Skoal and Copenhagen, in the United States. The international cigarette business continued through a new entity, Philip Morris International. In 2012, Lorillard acquired Blu Electronic Cigarettes, the manufacturer of Blu electronic cigarettes. In 2013, RJR announced that it will introduce VUSE electronic cigarettes and Altria announced that it will introduce MarkTen electronic cigarettes, thus, all three major cigarette manufacturers plan to have electronic cigarettes on the market (Sizemore 2013).

Some of the new products, such as electronic nicotine delivery systems (ENDS), marketed as "electronic cigarettes," were developed and/or are marketed by companies that had little or no experience in developing and marketing traditional tobacco products (WHO 2009c; Henningfield and Zaatari 2010; Cobb and Abrams 2011). Additionally, other tobacco products, such as bidis and waterpipes, have long histories of extensive use in other countries, but have been more recently marketed and adopted in the United States (WHO 2006; CDC 2012c). Given the level of evidence linking tobacco product use to ill health, all products containing tobacco and nicotine should be assumed to be both harmful and addictive, although the risk from the use of tobacco products depends not only on the type of product but also on how they are used (i.e., the actual doses of toxins that are taken in, and whether the product is used in addition to other products, promotes initiation of tobacco use, or delays smoking cessation) (WHO 2006, 2007). Thus, establishing a meaningful rank order of actual risk per product is not possible (Gray and Henningfield 2006; WHO 2006, 2008a).

Table 14.1 provides a summary of these products. It is meant to be illustrative, rather than comprehensive, because the nature of the products and their marketing is changing rapidly and an expanding array of products and manufacturers are being discussed in the trade literature. The products are categorized by their general form and mode of use, and not necessarily with reference to their definition by the U.S. Food and Drug Administration (FDA), or WHO, or statutory definitions by the U.S. Congress, FTC, or the Bureau of Alcohol, Tobacco, Firearms and Explosives. Together, the modified novel products, summarized in Table 14.1, pose challenges to research, surveillance, health policy, and regulation because they vary so widely in form, mode of use, apparent contents, designs and emissions, and potential health effects, including addictiveness, and marketing claims, implicit and explicit. Moreover, following introduction into the market, many products have been rapidly modified, perhaps in response to consumer feedback and market testing. For example, ENDS have grown from a category of novelty products in 2005 to an extensively marketed and increasingly accessible category, with awareness of ENDS doubling from 16.4% in 2009 to 32.2% in 2010 and ever use of ENDS more than quadrupling from 2009 (0.6%) to 2010 (2.7%) (American Legacy Foundation 2012; Regan et al. 2013). Studies and assessments by FDA and independent scientists have demonstrated enormous variability in design, operation, and contents and emissions of carcinogens, other toxicants, and nicotine from ENDS (Westenberger 2009; WHO 2009c; Henningfield and Zaatari 2010; Cobb and Abrams 2011; American Legacy Foundation 2012). The marketing claims for ENDS also vary widely and have included claims of safety, use for smoking cessation, and statements that they are exempt from clean air policies that restrict smoking (WHO 2009c; Cobb et al. 2010; Henningfield and Zaatari 2010; American Legacy Foundation 2012; Cheah et al. 2012).

Another less prevalent, but expanding and diversifying group of products is categorized by FDA as DTPs, which were evaluated by FDA's Tobacco Products Scientific Advisory Committee (TPSAC) in 2012 (TPSAC 2012). Extensive TPSAC deliberation and public

Table 14.1 Modified traditional tobacco products and novel tobacco products

Product type	Mode of use and operation	Developers and marketers	Health opportunities, concerns, and other comments
DTPs	Orally used films, tablets, and other systems that rapidly dissolve to provide buccal and some GI absorption[a]	Major tobacco companies developed or market with common apparent intent for use "when you can't smoke"	Some of these products appear to blur the distinction between tobacco and drug products but by not making explicit drug claims they have thus far avoided regulation as drug products. Product marketing generally appears to position the products as alternatives to cigarettes for when smoking is prohibited
ENDS[b]	Inhalation of vapors produced by heating contains nicotine and other substances. Some brands can be refilled by solutions made by the same or different companies	Chinese consumer product companies developed and dominate the global market. Many of the ENDS made in the United States are less cigarette-like in appearance	Products vary widely as to contents, emissions, and claims, thus reducing the relevance of categorical generalizations about their benefits and harms. Tobacco is not necessary for operation although some products include tobacco extracts to enhance sensory experience. These products are banned in some countries as unapproved drug products
Cigarette substitutes that heat tobacco with less tobacco combustion than cigarettes	RJR products burn carbon fuel; Philip Morris product electrically heats a small amount of tobacco per puff	Major cigarette companies	This category is distinguished from ENDS, and it is possible that it will be displaced by ENDS
Low nitrosamine smokeless tobacco including "snus" and pouches	Oral use with absorption and exposure primarily buccal along with GI exposure	Traditional smokeless companies and new companies, and more recently developed and acquired by major tobacco companies	This category varies widely from products that appear similar to conventional snuff and snus to those that appear more similar to pharmaceutical products
Low nicotine content cigarettes with low addiction risk	Inhalation of combustion products as with conventional cigarettes	Tobacco companies have tried to market such products over the past 20 years but presently are made primarily for research	Could enable cessation and reduce risk of addiction in those who initiated use. Not expected to be widely adopted unless all cigarettes were required not to exceed nicotine product standard by FDA (Teng et al. 2005; Hatsukami et al. 2010, 2012)
Waterpipes, also known as hookah and shisha	Inhalation of heated vapors drawn through water; often in 30–60 minute sessions with other persons sharing device	Traditional devices from India, Middle East, and Southeast Asia with many new companies in United States and elsewhere	Traditional and most widely used forms burn carbon material and produce high levels of user and environmental carbon monoxide and other toxic substances. More recent electronically heated systems have not been well studied. Some marketing claims include smoking cessation and exemption from clean air laws

Note: **DTP** = dissolvable tobacco products; **ENDS** = electronic nicotine delivery systems; **FDA** = U.S. Food and Drug Administration; **GI** = gastrointestinal; **RJR** = R.J. Reynolds.

[a]Dissolvable tobacco products have not been statutorily defined or defined by FDA or other agencies, and the term is used to include products that appear likely to dissolve in less than 1 minute, unlike traditional lozenges which are intended to dissolve over 10–30 minutes. The analysis provided for DTPs also applies to some new nondissolvable tobacco-free products such as "Verve," introduced in 2012.

[b]Electronic Nicotine Delivery Systems is the term recommended by the World Health Organization (2009c).

comments, including from public health organizations and the tobacco industry, led to conclusions that reveal great uncertainty as to whether these products are likely to contribute positively or negatively to public health (TPSAC 2012). The products were generally found to be lower in toxicants than traditional tobacco products, and lower in their likelihood of delivering comparable levels of disease-causing toxins as traditional tobacco products. TPSAC found that such products could confer potential health benefits at the individual and population levels if they were adopted as total substitutes for cigarettes by cigarette smokers who would not have otherwise quit. On the other hand, many of the products have apparently been developed and marketed to undermine smoking cessation efforts, by enabling cigarette smokers to manage restrictions on smoking by using them "for when you can't smoke" (TPSAC 2012). Another concern was the possibility that these products would emerge as initiation products and, thus, lead to initiation in persons who would not have otherwise done so. People who initiate nicotine exposure with DTPs might also be at risk for subsequent use of more toxic products, including cigarettes. Consequently, TPSAC concluded that the health risks of this category of products will be strongly determined by how they are marketed and how they are actually used (TPSAC 2012).

As discussed by WHO, tobacco products vary widely in form, content, and emissions, but virtually all types are primarily represented by products that are designed and manufactured to be addictive (WHO 2006). Earlier reports of the Surgeon General have described the addictive properties of tobacco products and the role of nicotine (e.g., USDHHS 1986, 1988, 1989, 2010), as have other authoritative agencies (Royal College of Physicians [RCP] of London 2000; National Institute of Drug Abuse [NIDA] 2012; WHO 2006, 2007, 2012b). This report does not review this foundational evidence, but does address some factors contributing to product addictiveness that are relevant to consideration of these emerging products for nicotine delivery. As discussed in the 2010 Surgeon General report, the ongoing research is contributing to further improvements in the understanding of the neurobiology and role of tobacco product design factors in tobacco addiction, as well as advances in the diagnosis and treatment of addiction and withdrawal as described in the fifth edition of the American Psychiatric Association's *Diagnostic and Statistical Manual* (American Psychiatric Association 2013). In addressing the public health consequences of these products, consideration needs to be given to ingredients and design features that can contribute to product addictiveness, and marketing approaches that can contribute to use patterns leading to addiction (WHO 2006; NCI 2008; USDHHS 2010, 2012).

Cigarettes carry the highest risk of addiction following initiation, due to cigarette designs that facilitate efficient and tolerable inhalation of nicotine-laden toxic smoke deep into the lung (RCP 2000; WHO 2001; USDHHS 2010). Although focused largely on cigarettes and conventional smokeless tobacco products, NCI Monographs 13 and 19 (NCI 2001, 2008) and an IOM report (Stratton et al. 2001) describe how product characteristics may be reflected in marketing, in order to stimulate initiation and foster continued use that leads to the development and maintenance of addiction. For example, cigarettes were designed to make smoke more easily inhalable and to provide low-tar and nicotine yields in smoking machine tests (NCI 2001). Smokeless tobacco products were designed with nicotine delivery and flavor characteristics targeted to certain populations, such as low-dose nicotine delivery fruit-flavored products for initiation by youth and higher dosage products targeted to tolerant longer term users (USDHHS 1994; *Federal Register* 1995, 1996). Similarly, FDA's TPSAC found that menthol in cigarettes was a design feature that produced physiological effects, including sensory effects contributing to tobacco use; and marketing and product branding of menthol and its effects also contributed to initiation and persistence of cigarette smoking (TPSAC 2011).

Menthol

Menthol is an organic compound, either derived from natural sources or synthesized, that is widely used in consumer and medicinal products, including cigarettes. It has cooling, analgesic, and irritative properties, reflecting its interactions with specific neuronal biological receptors that can modulate pain and communicate to areas of the brain concerned with taste and other sensations. The use of menthol in cigarettes followed the accidental discovery that menthol provided cooling properties to the smoke (Proctor 2011). Menthol brands entered the market in the 1930s and their use greatly expanded in the 1950s when aggressive marketing to African Americans began. It has been noted that the widespread marketing of menthol cigarette brands in Black communities covered "…literally every aspect of life, from Black-owned publications and jazz concerts through civil rights groups, to massive billboards throughout the Black community" (Gardiner and Clark 2010, p. S88). The manner in which the aggressive marketing of menthol cigarettes within Black communities resulted in persisting high rates of use of these brands among this group has been reviewed (Yerger and Malone 2002; Gardiner 2004; Sutton and Robinson 2004; Yerger et al. 2007). More recent analyses of marketing campaigns in

racial/ethnic communities have shown similar aggressive patterns of marketing of menthol cigarettes have continued (Cruz et al. 2010; Gardiner and Clark 2010). At present, menthol is a "characterizing flavor" for about 30% of cigarettes in the United States and it is present in most cigarettes at concentrations lower than in those labeled as menthol cigarettes (TPSAC 2011). Beyond being the predominant cigarette product smoked by African Americans, menthol cigarettes are popular among adolescents. In analyses of nationally representative survey data from 2004 to 2010, youth and young adults were heavy consumers of mentholated cigarettes, with menthol use particularly associated with being younger, female, and of non-White race/ethnicity (Giovino et al. 2013). Further, the survey data indicated that use of mentholated cigarettes has either remained constant or increased from 2004–2010 in youth and young adults while rates of use of nonmenthol cigarettes has been declining. Based upon these data, the authors suggested that progress in reducing youth smoking rates in recent years likely has been attenuated by the sale and marketing of mentholated cigarettes, including brands such as Camel Menthol and Marlboro Menthol (Giovino et al. 2013).

The *Family Smoking Prevention and Tobacco Control Act* (*Tobacco Control Act* 2009) banned the use of all characterizing flavors except menthol in cigarettes and cigarette tobacco. It explicitly required TPSAC to complete a report during its first year of existence on the public health impact of menthol in cigarettes. That report was released in July 2011 (USFDA 2011). It offers a comprehensive review of patterns of use of menthol cigarettes, the pharmacology and toxicity of menthol, and the risks of menthol cigarettes, including toxicologic and epidemiologic findings. To address the public health impact of having menthol in cigarettes, TPSAC modeled scenarios of smoking in the U.S. population, comparing the public health consequences of smoking with and without the presence of menthol cigarettes. TPSAC's review found evidence indicating that menthol cigarettes promoted experimentation and regular smoking and increased the likelihood of addiction in youth smokers. With regard to cessation, TPSAC concluded that among African Americans, smokers of menthol cigarettes were less likely to quit successfully. TPSAC did not find evidence that the presence of menthol in cigarettes increased the disease risks in smokers of menthol cigarettes compared to nonmenthol cigarettes.

Modeling carried out by TPSAC showed that the availability of menthol cigarettes increased the number of smokers in the population and led to additional excess mortality from smoking. Modeling by Levy and colleagues (2011) provided similar results. Based on its qualitative evaluation of the literature and the modeling results, TPSAC offered the overall conclusion that: "Removal of menthol cigarettes from the marketplace would benefit public health in the United States" (TPSAC 2011, p. 225). In July 2013, FDA issued an Advance Notice of Proposed Rulemaking to obtain additional information related to potential regulatory options on menthol cigarettes (*Federal Register* 2013). At the same time, FDA also released its own preliminary independent scientific evaluation of existing data and research on menthol cigarettes that addressed the association between menthol cigarettes and various outcomes, including initiation, addiction, and cessation (USFDA 2013c).

Overview of the *Tobacco Control Act*

The history of efforts to regulate tobacco has been reviewed in previous Surgeon General reports (USDHHS 2000, 2010, 2012) and books on tobacco control (Kluger 1996; Brandt 1997; Kessler 2001; Proctor 2011). The *Tobacco Control Act* (2009) gives FDA broad authority to regulate tobacco products. One of the unique features of the statute is that it creates a new regulatory framework by which tobacco products are now regulated. FDA is empowered to regulate in a manner that is "appropriate for the protection of the public health" (*Tobacco Control Act* 2009, §907(a)(3)(A)), an important departure from the standard of safety and efficacy that governs the regulation of human drugs and medical devices. The U.S. Congress also commanded FDA to consider the individual- and population-level health effects of regulatory actions, including the impact on initiation, cessation, and reinitiation by those who had quit (*Tobacco Control Act* 2009, §907(a)(3)(B)). FDA's efforts are funded by a fee levied on tobacco manufacturers and importers (*Tobacco Control Act* 2009, §919).

Over time, effective implementation of the powerful regulatory tools contained in the *Tobacco Control Act* will serve as a key component of a comprehensive national tobacco control plan to reduce the death and disease from tobacco use (Zeller 2012, 2013). The most significant of the provisions in the law include:

- *Authority to Issue Product Standards*: Section 907 of the *Tobacco Control Act* empowers FDA to issue standards to control the allowable levels of chemicals or chemical compounds, or ingredients in tobacco products or smoke to reduce the toxicity, addictiveness, or appeal of tobacco products. This

provision includes the power to reduce the amount of nicotine that can be delivered to nonaddictive levels as long as the standard does not reduce nicotine levels to zero (*Tobacco Control Act* 2009, §907(d)(3)). FDA will have to consider the impact of a proposed standard on population-level risks and benefits, including both users and nonusers of tobacco products; and the likelihood of current users stopping tobacco use or nonusers starting tobacco use (*Tobacco Control Act* 2009, §907(a)(3)).

- *Authority to Issue Orders for the Marketing of New Products*: Historically, the tobacco industry was free to introduce new products and modify marketed products in any way they chose. Section 910 of the *Tobacco Control Act* now requires a manufacturer to obtain an order from FDA, prior to the marketing of a new product or making a modification to an existing product including constituent, smoke constituent, content, delivery or form of nicotine, additive or ingredient (*Tobacco Control Act* 2009, §910(c)). Applications for new products will be reviewed by FDA under the public health standard, using the mandatory individual- and population-level criteria as considerations.

- *Authority to Issue Orders for "Modified Risk Tobacco Products"*: To prevent consumers from being misled by claims and descriptors on tobacco packaging and advertisement such as "light" or "low-tar" on tobacco packaging and advertisement (NCI 2001), Section 911 of the *Tobacco Control Act* states that no one may introduce into interstate commerce any modified-risk tobacco product unless FDA issues a risk modification or exposure modification order permitting such introduction. In order to qualify for a risk modification order, manufacturers must demonstrate, among other things, that the product, as actually used by consumers, will significantly reduce harm and the risk of tobacco-related disease to individual tobacco users and benefit the population as a whole. In order to qualify for an exposure modification order, manufacturers must demonstrate that the overall reductions in exposure are substantial and that the product is expected to benefit the health of the population as a whole and also that consumers will not be misled into believing that the product presents a lower risk for disease or is less harmful than other commercially marketed tobacco products (*Tobacco Control Act* 2009, §911(g)(2)).

- *Authority to Demand Health Information from Manufacturers*: Under Section 904(b) of the *Tobacco Control Act*, FDA may require tobacco companies to submit information on the health, toxicological, behavioral, or physiological effect of any tobacco products and their constituents, including smoke constituents, ingredients, components, and additives (*Tobacco Control Act* 2009, §904(b)). The information includes documents related to research activities and findings, as well as marketing and research activities.

Until implementation of the *Tobacco Control Act* in 2009, FDA had no authority to address product formulation issues, and there was little federal oversight of tobacco product designs that might contribute to addictiveness. Since the mid-1990s' release of the tobacco industry documents, it has been increasingly evident how extensive were the research, manufacturing, and marketing efforts by the industry to make products more acceptable and addictive (*Federal Register* 1995, 1996; Kessler 2001; WHO 2001, 2007, 2012b; USDHHS 2010). These examples illustrate that the risk, severity, and persistence of addiction to tobacco, like addiction to other substances, are influenced by many factors beyond the pharmacology of the addicting drug. These include social factors; perceptions of harm, cost, and access (USDHHS 1988; O'Brien 2010;); and the formulation of the drug itself (*Controlled Substances Act of 1970;* Compton and Volkow 2006; Cone 2006; Schuster 2006; Dart 2009; Dasgupta and Schnoll 2009; O'Brien 2010; USFDA 2010a, 2013b; NIDA 2012). In fact, changes in drug form, such as the introduction of free-base and smokeable cocaine in the 1980s, and easily tampered and abused prescription opioids in the 1990s, are considered major factors contributing to the escalation of stimulant and opioid abuse, respectively (Compton and Volkow 2006; Koob and Le Moal 2006; O'Brien 2010). Similarly, many changes in tobacco product form and marketing have been documented as efforts by the tobacco industry to contribute to tobacco use and addiction by fostering initiation among young people; making products easier and more acceptable to use; making and marketing products so as to address health concerns; and making and marketing products to perpetuate addiction through the use of alternate products, when smoking is not allowed or is socially unacceptable (*Federal Register* 1995, 1996; Kessler 2001; *Philip Morris* 449 F. Supp. 2d at 908; WHO 2001, 2007, 2012b; USDHHS 2012). These concerns contributed to the rationale and support for the development and implementation of tobacco regulation in the United

States through the *Tobacco Control Act* (2009), and globally through the WHO Framework Convention on Tobacco Control (FCTC) (WHO 2013).

The *Tobacco Control Act* gives FDA the authority to set standards ("product standards") for products, so as to contribute to the improvement of the public health and reduction of tobacco product use. To support FDA's efforts, NIH and FDA are collaborating to foster research on tobacco product addictiveness, toxicity, appeal, and other characteristics that will provide additional scientific foundation for developing a regulatory framework, including potential tobacco product standards (NIH and FDA 2012). The research findings could lead to product standards that will not only curtail the efforts of the tobacco industry to enhance addictiveness and attractiveness, but may also contribute to standards that will contribute to reducing their potential to cause and sustain addiction, thus supporting tobacco control prevention and cessation efforts. Globally, WHO is working through the WHO FCTC with member states, and its expert advisory committee, to assess the evidence and support efforts to develop recommendations for tobacco product regulation that will contribute to reduced use and addiction (WHO 2012b, 2013). Nationally and internationally, the challenge of changes in tobacco product form, patterns of use, and the industry, are being addressed by these regulatory frameworks and guided by continuing research.

Significant FDA Actions to Date

FDA has taken a number of significant actions, as it creates the regulatory framework to oversee tobacco products and implement the broad provisions of the *Tobacco Control Act* (USFDA 2013a). Among the key steps the agency has taken are the following.

Reissuance of FDA's 1996 final rule that restricts the sale and distribution of tobacco products to minors (21 CFR *Part 1140 March 2010)*

The key provisions of this rule include prohibiting the sale of cigarettes or smokeless tobacco to people younger than 18 years of age; prohibiting the sale of cigarette packages with fewer than 20 cigarettes; prohibiting the sale of cigarettes and smokeless tobacco in vending machines, self-service displays, or other impersonal modes of sales, except in very limited situations; prohibiting free samples of cigarettes, and limiting the distribution of free samples of smokeless tobacco products. The final rule also contains restrictions on marketing, including prohibiting tobacco brand name sponsorship of any athletic, musical, or other social or cultural event, or any team or entry in those events; and prohibiting the sale or distribution of items, such as hats and tee shirts, with cigarette and smokeless tobacco brands or logos (*Federal Register* 2010).

Regulation requiring graphic warning labels on cigarette packages and in advertisements (June 2011)

The key provisions of this final rule mandated nine new warnings on cigarette packages and cigarette advertisements covering 50% of the front and back panels of all cigarette packs, and at least 20% of all cigarette advertising (*Federal Register* 2011). The rule contained a separate image for each of the nine new text warnings mandated in the *Tobacco Control Act* (2009, §201(a)).

Litigation was filed against FDA by the tobacco industry in the case of *R.J. Reynolds Tobacco Co. v. U.S. Food and Drug Administration*, No. 11-1482 (D.D.C.), *on appeal*, No. 11-5332 (D.C. Cir. 2012). Although the U.S. Court of Appeals for the Sixth Circuit upheld FDA's authority to require graphic health warnings, the D.C. Circuit, in a separate challenge, ruled that the warnings promulgated by FDA were unconstitutional (violated the 1st amendment) and remanded the issue back to the agency. FDA has announced it will undertake research to support new rulemaking on graphic warning labels consistent with the *Tobacco Control Act*. Larger warnings on smokeless tobacco products have already been implemented.

In addition, FDA has issued a series of guidance documents on topics that, although not legally binding, represent FDA's current thinking on a subject matter. The subject areas of the most significant guidance documents include:

- Implementing the Congressionally mandated ban on labeling and advertising containing misleading descriptors such as "light" and "low-tar" (June 2010) (USFDA 2010b). The *Tobacco Control Act* prohibits the use of descriptors such as "light" and "low-tar" as unapproved modified tobacco product claims. The basis for this provision is that consumers mistakenly believe products bearing these descriptors are safer or less harmful than other tobacco products. The FDA guidance document provided clarification on the prohibited use of these terms.

- Demonstrating "substantial equivalence" for tobacco products (January 2011) (USFDA 2011c). In addition to pre-market evaluation of new tobacco products, the statute details another pathway to market under

section 905(j) of the *Tobacco Control Act*. This guidance document contains important information for tobacco product manufactures who wish to try to demonstrate substantial equivalence. In June 2013, the Center for Tobacco Products at FDA issued the first orders allowing the marketing of new tobacco products, after the agency determined the products to be "substantially equivalent" to specific predicate products. FDA also issued the first orders denying marketing for other new tobacco products after finding that the products had different characteristics than their predicate products and the applicant did not adequately show that the new products do not raise different questions of public health (and therefore were "not substantially equivalent" to the predicate product) (USFDA 2013e). FDA continues to review product submissions and to make decisions about whether the products are substantially equivalent (and can therefore be legally marketed) or not substantially equivalent (in which case the product cannot be marketed in the United States).

- Applications for premarket review of new tobacco products (September 2011) (USFDA 2011a). As previously mentioned, the statute envisions that manufacturers will file applications with FDA for orders authorizing the marketing of new tobacco products. This guidance specifies information that should be contained in such an application including full reports on health risks; statement of all components, ingredients, additives, properties, and principles of operation; description of methods of manufacturing and processing; explanation of how the product complies with applicable product standards; and proposed labeling. The guidance interprets and expands on several key provisions in Section 910 of the *Tobacco Control Act*, including reports on investigations of health risks associated with the product; providing information on ingredients, additives, and other properties of the product; and providing information on methods of manufacturing and processing.

- Establishment of a list of harmful and potentially harmful constituents in tobacco products. The *Tobacco Control Act* obligated FDA to create a list of harmful and potentially harmful constituents in tobacco products (HPHCs) (*Tobacco Control Act* 2009, §904(a)(3)). In April 2012, FDA published a list of 90 HPHCs. Additionally, Section 904(a)(3) requires tobacco product manufacturers to submit a list of HPHCs by brand and by quantity in each brand and subbrand. Section 904(d) of the *Tobacco Control Act* also requires FDA to publish the HPHC list in a way that is understandable and not misleading to a layperson [904(d)(1)]. FDA is undertaking an experimental study to determine the best way to present such data.

- Applications for designation as a "modified risk tobacco product (April 2012)" (USFDA 2012b). This is one of the most extensive guidance documents issued by FDA. It elucidates what manufacturers should include in applications in order to market modified-risk tobacco products that could bear claims touting either a reduction in exposure to harmful compounds or claims that risk has actually been reduced. Importantly, guidance is provided on the types of studies companies should consider conducting and including in their applications.

Given that FDA regulates tobacco products based on a public health standard that needs to consider the product's impact on the population as a whole, including users and nonusers, tobacco regulatory science serves as the critical bridge between tobacco products and public health by enabling FDA to assess various products' inherent risks, how they are used, and impact on individual and population health in order to regulate them appropriately. Tobacco regulatory science supports the evaluation of the risks and benefits of tobacco regulatory decisions and provides a robust scientific foundation for regulatory policies regarding the manufacture, marketing, and distribution of tobacco products and educating the public about the harms.

Although there is a vast and sound science base with regard to numerous provisions within the *Tobacco Control Act,* new research will not only help assess the impact of FDA regulatory authority over tobacco products, but inform future regulatory activities. The agency took several actions to ensure that sound science will exist with which to inform regulatory actions. In 2011, it collaborated with NIDA to launch a major longitudinal study of tobacco use and behavior (Population Assessment of Tobacco and Health Study) (USFDA 2011b). The study, which started in September 2013, expects to invite 59,000 people 12 years of age and older to participate and will examine behavioral changes over time in tobacco product use and subsequent biological and health outcomes. In 2012, FDA issued a statement of research priorities designed to communicate its priority regulatory science research questions (USFDA 2012a). In September 2013, FDA and NIH announced the

funding of 14 research projects to establish the Tobacco Centers of Regulatory Science, a first-of-its-kind program designed to generate research to inform the regulation of tobacco products to protect public health and train the next generation of tobacco regulatory scientists (USFDA 2013d). In addition, FDA is funding numerous research projects via collaborations with NIH, CDC, FDA's National Center for Toxicological Research and research contracts in order to better understand the risks associated with tobacco use.

Challenges to Full Implementation of the *Tobacco Control Act*

FDA has faced a number of challenges as it implements the extensive provisions of the *Tobacco Control Act*. An entire center needed to be established at the same time that the agency was confronted with a series of mandatory deadlines in the law. From 2009–2012, the agency succeeded both in building this new center and meeting all of the deadlines imposed by the U.S. Congress.

A second challenge was the successful litigation commenced by the tobacco industry around preventing the final graphic warning label rule from going into effect (*R.J. Reynolds v. Food and Drug Administration* 2012). On April 22, 2013 the Supreme Court of the United States declined to hear the appeal of the March 2012 ruling by the U.S. Court of Appeals for the Sixth Circuit (Bayer et al. 2013; Orentlicher 2013). There is the ongoing possibility of litigation from the tobacco industry (Thomas and Gostin 2013).

Evidence-based regulation of the manufacture, sale, and marketing of tobacco products is an essential component of a comprehensive national effort to reduce the death and disease resulting from tobacco use. The tools to control product introduction, claims, and product performance were intended by the U.S. Congress to place oversight of the tobacco products marketplace within FDA, an independent agency whose mission is to protect public health.

Potential Impact of Implementation of the *Tobacco Control Act*

Continuing actions include regulating existing products and their constituents; reviewing and allowing the marketing of new products; evaluating modified risk claims and products and requiring premarket testing and postmarket surveillance to evaluate unintended consequences of introducing these products to the market; evaluating substantial equivalence reports before the products are introduced into the market; and educating the public with accurate information to correct misleading messages (Zeller 2012, 2013). These actions will benefit from FDA's application of the public health standard and population-level behavioral criteria as they relate to proposed regulatory action (Villanti et al. 2011; Zeller 2012).

FDA authority over tobacco products has the potential to be a key policy lever to reduce tobacco use and its harms at the population level (Zeller 2012). For example, a simulation model of multiple influences projected a sizeable benefit of a mentholated cigarette ban with 323,000 deaths averted from 2011–2050, a third of them among African Americans, assuming an impact on initiation and cessation of 10% (Levy et al. 2011). Experts have also outlined strategies for tobacco harm reduction (Zeller et al. 2009), such as nicotine reduction (Henningfield et al. 2004; Hatsukami et al. 2010, 2013; Benowitz and Henningfield 2013) and product standards (Hatsukami 2013), as avenues for FDA to dramatically reduce population harm. FDA has a variety of potential options including considering ways to reduce the harm and addiction liability of all tobacco products, ways to enhance the use of noncombustible and less addictive tobacco-derived nicotine products, and carefully evaluating modified risk/reduced harm forms of delivery (Hatsukami 2013). The lines between the recreational use of emerging tobacco-derived nicotine products and the therapeutic use of nicotine replacement products for smoking cessation are changing (e.g., in the form of using e-cigarettes, dissolvables, or snus; or in promoting more flexible therapeutic use of medicinal nicotine products for cessation in current users).

Tobacco Control Policies

Public health efforts to control tobacco use have been bolstered by policies at the national, state, and local levels. This section briefly examines the effectiveness of selected regulatory approaches (e.g., taxes and smokefree indoor air policies) to prevent tobacco use, encourage cessation, and reduce exposure to secondhand smoke among nonsmokers. This section also includes a brief discussion of advertising and restricted access for minors. Several of these policies are among the most effective tobacco control strategies of the past 50 years (e.g., taxation and smokefree indoor air policies) and are the cornerstone of state and local tobacco control efforts covered in a later section in this chapter. These strategies are reviewed here, however, since over the history of tobacco control, they have commonly been applied individually.

Taxes

In the United States, the federal government, all 50 states, the District of Columbia, and many local governments tax tobacco products. Although many factors affect the final price of cigarettes and other tobacco products, the most important policy-related determinant of tobacco prices is excise taxes on tobacco products. Taxes on tobacco provide revenue to governments at a relatively low administrative cost, making these taxes especially appealing. Moreover, higher taxes have decreased consumption of tobacco products, especially cigarettes, and thereby improved public health (USDHHS 2012). This combination of increasing revenues and improving public health has made tobacco taxation a valuable and effective policy lever in recent decades. In 2012, the federal tax rate was $1.01 per pack (Orzechowski and Walker 2012) and the mean state tax rate was $1.53 per pack (Campaign for Tobacco-Free Kids 2013). The average price, nationally, for a pack of cigarettes in 2012 was $6.00 (Campaign for Tobacco-Free Kids 2012b).

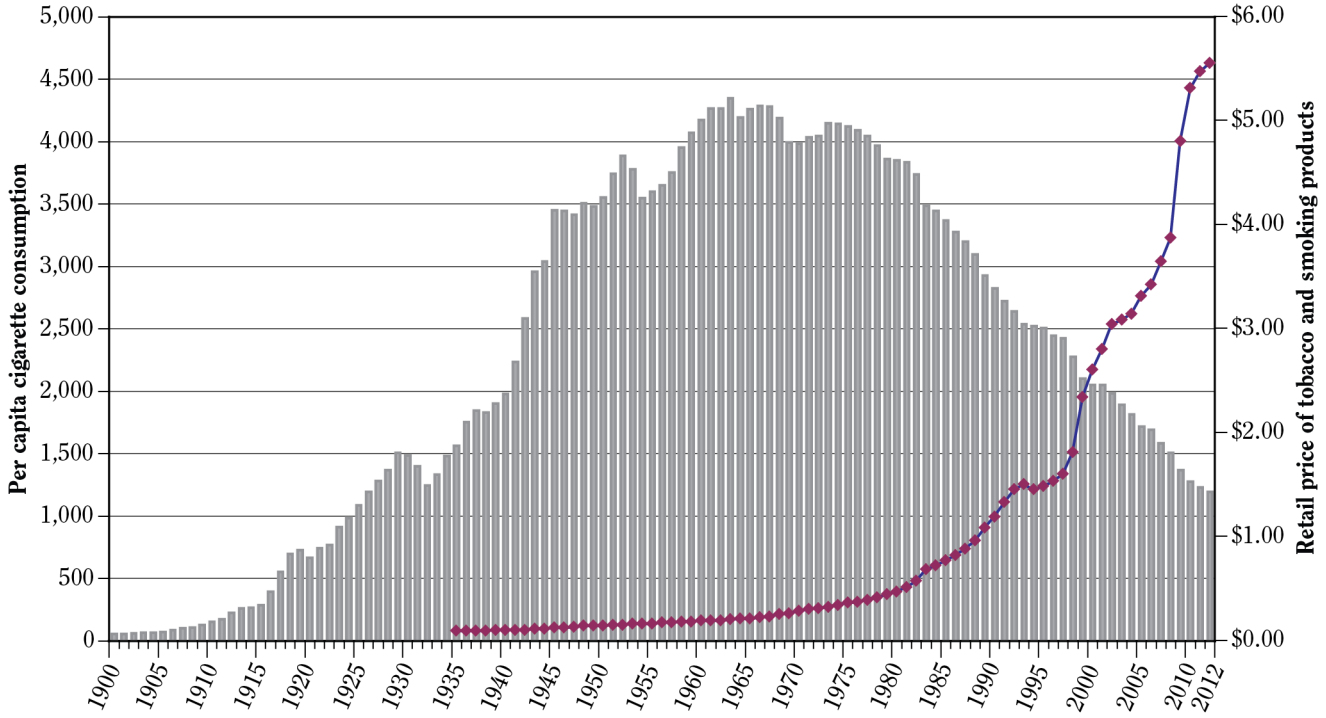
Figure 14.4 shows that the inflation-adjusted retail price of cigarettes in the United States had remained relatively low for much of the twentieth century, and then increased by over 70% from 1997–2002. This large increase was partly the result of two federal tax increases (from $0.24 to $0.34 in 2000 and from $0.34 to $0.39 per pack in 2002) and the numerous increases in state excise taxes; it also reflected the significant increases in the wholesale price of cigarettes. In fact, between 1998–2003, wholesale prices for cigarettes increased 122% (Capehart 2004), largely as a result of the increased costs associated with expenses for individual state tobacco settlements and expenses related to the Master Settlement Agreement (MSA). The more recent sharp increases in the inflation-adjusted retail price of cigarettes are due to another federal tax increase (from $0.39 to $1.01 in 2009) and numerous increases in state and local taxes. Since January 1, 2002, 47 states, the District of Columbia, and several U.S. territories have increased their cigarette excise taxes a total of 105 times. Even Kentucky, North Carolina, and Tennessee—tobacco-producing states that have long resisted raising tobacco taxes—have increased tax rates on cigarettes. As of March 31, 2013, the rates ranged from $0.17 per pack in Missouri to $4.35 per pack in New York (Table 14.2).

Moreover, hundreds of municipalities impose taxes on cigarettes, but the rates are generally relatively small when compared with state taxes. However, in recent years, several cities and counties have implemented large increases. For example, in 2002, New York City increased its tax on cigarettes from $0.08 per pack to $1.50 per pack. Similarly, both the city of Chicago and Cook County, Illinois (Cook County includes Chicago as well as many other jurisdictions), raised taxes on cigarettes. Combining federal, state, and local taxes, individuals purchasing cigarettes in New York City and Chicago, Illinois, paid the highest cigarette excise taxes in the country at $5.85 and $5.66 per pack, respectively, as of December 12, 2012 (Campaign for Tobacco-Free Kids 2013).

Another kind of tax, the general sales tax, is also quite common. In 2013, 45 states and the District of Columbia imposed general sales taxes on cigarettes; as of November 1, 2012, these taxes added between $0.14 and $0.43 to the price of a pack of cigarettes (Table 14.2). In addition, 9 states currently apply excise taxes on tobacco products other than cigarettes; these taxes are predominantly ad valorem. Finally, in most states the general sales tax is applied to other tobacco products as well as to cigarettes.

Previous Surgeon General's reports (USDHHS 2000, 2012) have concluded that increases in cigarette prices, including those that result from increases in excise taxes, reduce the initiation, prevalence, and intensity of smoking among youth and adults. Additionally, two comprehensive reviews of the literature summarize the evidence on the impact of price on tobacco consumption; one is included in the International Agency for Research on Cancer (IARC) Handbooks of Cancer Prevention in Tobacco Control

Figure 14.4 Annual retail tobacco price index and per capita (18+) cigarette consumption—United States 1900–2012



Source: Orzechowski and Walker 2013; U.S. Bureau of Labor Statistics (BLS) 2013; U.S. Department of Agriculture 2013; U.S. Department of the Treasury 2013.
Note: U.S. Bureau of Labor Statistics (BLS) Tobacco and Smoking Product Index was converted to average retail price per pack using BLS Fiscal Year (July–June) 2011 Index (825.49) and Orzechowski and Walker (2013) average annual price for 2011 ($5.55) values.

(IARC 2011), and the second a summary of key findings by Chaloupka and colleagues (2011). Five general conclusions can be drawn from these reviews (Chaloupka 2011; IARC 2011). First, increases in cigarette prices can lead to substantial reductions in cigarette smoking. The consensus estimate from the two reviews is that a 10% increase in cigarette price will result in a 3–5% reduction in overall cigarettes consumed. Second, increases in cigarette prices will decrease not only the prevalence of smoking but also the average number of cigarettes smoked by smokers. Third, much previous research on cigarette consumption among youth suggests that both youth and young adults are more responsive than adults to changes in cigarette prices, with several studies finding youth and young adults to be two to three times as responsive to changes in price as adults (see USDHHS 2012 for a complete review). Fourth, there is greater price responsiveness among lower income populations (IARC 2011). Finally, state excise tax increases create revenues for states.

In 2009, the *Children's Health Insurance Program Reauthorization Act* increased the federal tax rate on cigarettes from 39 cents per pack to 100.66 cents per pack. For the first time, it also applied the same tax rate to cigarette-like small cigars (from 3.7 cents per pack to 100.66 cents per pack) and roll-your-own tobacco (from 4.5 cents per pack to 100.66 cents per pack) (Campaign for Tobacco-Free Kids 2009). However, there remain substantial differences in the federal taxes on these products (cigarettes, small cigars, and roll-your-own tobacco) and other tobacco products, including regular cigars, pipe tobacco, and smokeless tobacco, which are taxed at much lower rates. In addition, the industry manipulated the weight of some small cigars by adding a few grams of filler to make them qualify as large cigars, thus avoiding the tax increase (CDC 2012a). This change in classification resulted in a dramatic, immediate increase in large cigar use over a 2-month period. The industry also began repackaging and marketing pipe tobacco to be used for roll-your-own

Table 14.2 State cigarette excise taxes (dollars per pack) and sales tax rate applied to cigarettes

State	Excise tax March 31, 2013 (in dollars)	Sales tax rate November 1, 2012 (%)	State	Excise tax March 31, 2013 (in dollars)	Sales tax rate November 1, 2012 (%)
Alabama	0.425	4	Montana	1.70	0
Alaska	2.00	0	Nebraska	0.64	5.5[d]
Arizona	2.00	6.6	Nevada	0.80	6.85[a,b]
Arkansas	1.15	6	New Hampshire	1.68	0
California	0.87	7.25[a,b]	New Jersey	2.70	7
Colorado	0.84	2.9	New Mexico	1.66	5.125
Connecticut	3.40	6.35	New York	4.35	4[d]
Delaware	1.60	0	North Carolina	0.45	4.75[d]
District of Columbia	2.50	6[c]	North Dakota	0.44	5
Florida	1.339	6	Ohio	1.250	5.5
Georgia	0.37	4[d]	Oklahoma	1.03	4.5[d]
Hawaii	3.20	4	Oregon	1.18	0
Idaho	0.57	6	Pennsylvania	1.60	6
Illinois	1.98	6.25	Rhode Island	3.50	7
Indiana	0.995	7	South Carolina	0.57	6
Iowa	1.36	6	South Dakota	1.53	4
Kansas	0.79	6.3[d]	Tennessee	0.62	7
Kentucky	0.60	6	Texas	1.41	6.25[d]
Louisiana	0.36	4[d]	Utah	1.70	4.65[b,d]
Maine	2.00	5	Vermont	2.62	6
Maryland	2.00	6	Virginia	0.30	5
Massachusetts	2.51	6.25	Washington	3.025	6.5
Michigan	2.00	6	West Virginia	0.55	6
Minnesota[e]	1.23	6.875[d]	Wisconsin	2.52	5[b]
Mississippi	0.68	7	Wyoming	0.60	4[b]
Missouri	0.17	4.225[d]			
Mean state excise tax: $1.478 Median state excise tax: $1.339		Mean sales tax rate: 5.05% Median sales tax rate: 6%			

Source: Sales tax data from Orzechowski and Walker 2012. Excise tax data from Centers for Disease Control and Prevention, Office on Smoking and Health, State Tobacco Activities Tracking and Evaluation System, unpublished data.

Note: The states of Alaska, Delaware, Montana, New Hampshire, and Oregon do not have a state general sales tax.

[a]Includes that portion of state-collected local sales tax rates where local rates are uniform and statewide.

[b]Additional local taxes that are not uniform are collected by the state and are not included here.

[c]The District of Columbia exempted cigarettes from the sales and use tax in October of 2011 and replaced it with a surtax of 36¢ per 20 pack. The tax listed in the table is the cigarette excise tax of $2.50 plus the cigarette surtax of 36¢.

[d]Certain cities and/or counties impose general sales and/or excise taxes that are collected by the state (not included here).

[e]Minnesota sells stamps for $1.586 per pack. It is a composite of the 48¢ per pack excise tax, a 75¢ per pack health impact fee, and a 35.6¢ per pack wholesale sales tax assessed in lieu of a general sales tax.

cigarette production. Evidence indicates that despite continued decreases in cigarette consumption in the United States, consumption of re-engineered pipe tobacco and large cigars has increased substantially since the federal tobacco excise tax was increased in 2009 (CDC 2012a).

As discussed in previous Surgeon General's reports, several significant challenges have impeded the effectiveness of excise tax increases. As the differential levels of taxation have widened between states, tax avoidance and evasion practices have increased. Tax avoidance and evasion, also known as illicit trade, occurs along a continuum of individual and group behaviors. Tax avoiders at both the individual and group levels pay some local, state, and federal taxes, whereas tax evaders do not. Tax avoidance activities include individual cross-border, Internet, and untaxed purchases on tribal lands, as well as consumer behaviors such as product switching, carton purchases, and using cheaper outlets. Individuals and small-scale organizations also bootleg cigarettes in low tax jurisdictions for resale in high tax jurisdictions. Tax evasion includes illegal activities often conducted by large-scale organizations, such as organized smuggling, counterfeiting, and illegal manufacturing. In states and municipalities with the highest taxes, such as New York and Chicago, as many as 40% of cigarettes consumed were purchased in a lower-tax jurisdiction (Merriman 2010; Virginia State Crime Commission 2013). More than one-half (55.4%) of smokers report using at least one price-minimization strategy when purchasing cigarettes—including carton purchasing, Indian reservation purchase, generic brands, coupon use, and Internet purchase—with an average reduction of $1.27 per pack (22%) (Xu et al. 2013). In addition, the tobacco industry has developed extremely sophisticated mechanisms to blunt and mitigate the effects of price increases. These include Web-based, mail-order, brand repositioning, and store-based discounting that is timed to scheduled price increases.

Tax avoidance and evasion undermine the efficacy of high prices in reducing consumption and initiation, especially among price-sensitive groups (IARC 2011). However, IARC concluded that there is sufficient evidence that tax avoidance and evasion reduce, but do not eliminate, the public health and revenue impact of tobacco tax increases (IARC 2011).

Selected state experience suggests that all levels of government can enhance revenue collection and minimize tax avoidance and evasion through several promising policy approaches. For instance, California and Massachusetts have both implemented a high-tech cigarette tax stamp, which includes encrypted information on payments that is reported electronically to the state's revenue collection entity. Electronic data collection and reporting allows for more consistent monitoring of tax and MSA payments, improves tobacco licensure management, and makes the stamps harder to counterfeit. California has found that this tax stamp, combined with enhanced tobacco tax payment enforcement, has helped reduce state tax evasion by 37% since its implementation in 2005 (McIntosh 2007). The state estimates that an additional 101 million packs per year are sold through legal retail distribution channels instead of illegally, valued at $87.7 million per year (Bartolo and Kimsey 2013). Improved tax stamping technology appears to be a promising state tobacco control practice.

It has been suggested that this promising state practice could also be expanded to the national level with a national track and trace system. A track and trace system, in the tobacco control context, is a system that can track goods from manufacture to distribution to sale, identifying points in the supply chain where taxes should be paid and confirm payment. WHO's FCTC includes establishing a national track and trace system and recommends that system include, at a minimum: nonpredictable serialization of all tobacco products to the level of the smallest saleable unit, with each unique code linked to a secure database of information on that product; common numbering standards for serialization, which should include information about the manufacturer, date of manufacture, and brand; human-readable printing/labeling of serialization of numbers on all traded units; establishment of parent-child relationships between different packaging units so individual cartons and cases can be separated from master cases during shipping; recordkeeping along the supply chain; maintenance of relevant data by supply-chain partners; query interfaces between the databases of supply-chain partners and enforcement authorities; and a standard protocol for transferring queries and data (WHO 2010).

The *Tobacco Control Act* authorizes the FDA to implement a national track and trace system (15 *U.S.C.* §920(b)(3)). The Department of the Treasury's Alcohol Tobacco Tax and Trade Bureau, which is responsible for collecting federal tobacco excise taxes, while not authorized to implement a national track and trace system, has authority over product markings (e.g., tax stamps) to facilitate this tax collection (26 *U.S.C.* §5723(b)). These two agencies would benefit from working together to develop a track and trace system that could meet their two complementary goals: to collect federal tobacco excise taxes and to control tobacco product regulations (Department of the Treasury 2010).

Data from France indicate that price increases can be a win-win scenario for tobacco control and the government. From 1990–2005, cigarette prices tripled, consumption was cut in half, and government revenue from

tobacco doubled, adjusted for inflation (Peto 2013; Jha and Peto, in press). The 2009 U.S. federal tax increase on cigarettes and subsequent tax increases at the state and local levels represent recent successes in tobacco control. However, a substantial range persists in the levels of cigarette excise taxes across states, and cigarettes and noncigarette tobacco products are not similarly taxed. Another issue is that current tax levels are static and do not account for inflation. Increasing the federal tax for noncigarette products, implementing systems to control for tax avoidance and evasion (e.g., high-tech tax stamps and track and trace systems), shrinking the tax disparity between states and localities, and establishing a taxation system that accounts for inflation, would likely improve the impact of taxes on the prevalence of tobacco use, especially among young smokers most sensitive to price. Closing the gap in these federal tax rates would further reduce tobacco use and increase tobacco revenues at the federal level.

Finally, there is concern that the dramatic drop in funding for tobacco control programs, which has occurred concurrently with a dramatic increase in tax-related revenue to states, may not be entirely coincidental. Although increases in price from excise taxes still make money for a state despite decreased consumption, fiscal agencies in states may not perceive the same relationship between increased funding for effective tobacco control programs and state revenues. Although long-term reductions in smoking may lower state expenditures for health care, this is a much less tangible effect than the immediate loss of tax and MSA revenue from a significant decline in cigarette consumption due to a tobacco control program effect. For example, some state governors raised concerns about the 2009 federal tax increase because they thought the resulting consumption drop would lower their tax and MSA revenues.

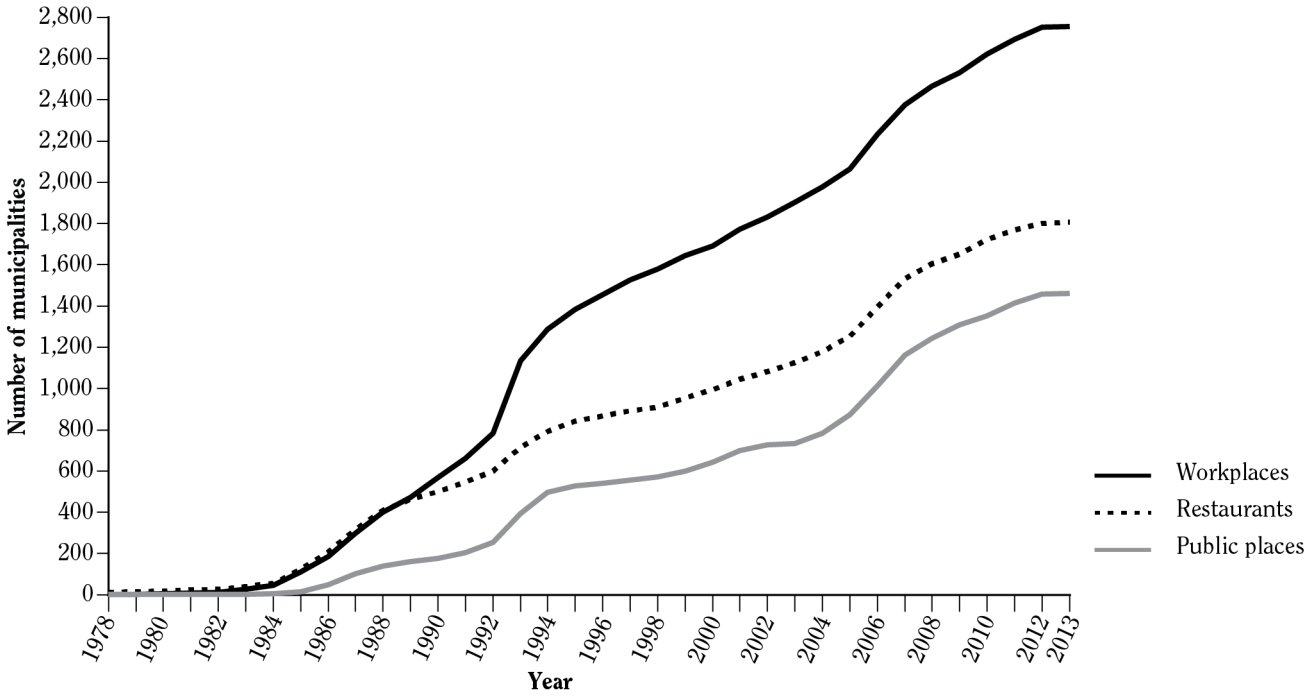
Smokefree and Tobacco-Free Legislation

As discussed later in this chapter, smokefree legislation at the state and local levels is a key component of a comprehensive tobacco control strategy (Task Force on Community Preventive Services 2005; CDC 2007; USDHHS 2012). Although progress has been made to increase the protection of nonsmokers in the United States from exposure to secondhand smoke since the release of the 1986 Surgeon General's report on the health consequences of involuntary exposure to tobacco smoke (USDHHS 1986a), biomonitoring of exposure indicates that about 40% of nonsmokers, and about one-half of young children 3–11 years of age, continue to be exposed (CDC 2010). Wide geographic, occupational, and demographic disparities remain (CDC 2008b,c, 2010). In 2008, it was estimated that only about one in three residents of the United States live under state or local laws that make worksites, restaurants, and bars completely smokefree (CDC 2008b, 2010).

As described in Chapters 6–10 and previous reports, exposure to secondhand smoke has been linked to a wide variety of adverse health effects affecting the fetus, infants and children, and adults (USDHHS 2006, 2010). The primary purpose of laws and policies on secondhand smoke is to protect nonsmokers from exposure to secondhand smoke. However, a growing body of evidence suggests that these policies have the additional benefit of lowering smoking rates among youth and young adults. There are several pathways for this effect including lower visibility of role models who smoke, fewer opportunities to smoke alone or with others, and diminished social acceptability and social advantage for smoking (Alesci et al. 2003; Eisenberg and Forster 2003; Wakefield and Forster 2005). One study, Dinno and Glantz (2009), indicated that although the prevalence of smoking and cigarette consumption was higher in people with low education and income (using the 2002 Tobacco Use Supplement to the Current Population Survey), a cross-sectional analysis found that this group exhibited the same reductions in smoking associated with the presence of clean indoor air laws and tax increases on tobacco products as did people in higher education and income groups.

Policies on clean indoor air take the form of legislation and/or regulations at the federal, state, local, and institutional levels that prohibit smoking in specified locations, such as workplaces, public places, restaurants, bars and casinos, schools, day care centers, and health care facilities (USDHHS 1989, 2000). Although there have been laws on clean indoor air for 40 years, their coverage has expanded dramatically in recent years (Hyland et al. 2012). As of May 31, 2013, 24 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands have laws that prohibit smoking in all workplaces, including bars and restaurants (American Nonsmokers' Rights Foundation [ANRF] 2013a). As noted earlier in this chapter, the movement for laws on clean indoor air largely began at the local level, and many states without comprehensive laws have cities or counties with such laws. The spread of these local laws is shown in Figure 14.5. The ANRF (2013a) estimated that as of May 31, 2013, comprehensive local and/or state laws on clean indoor air covered 49% of the U.S. population. Figure 14.6 provides a map of the implementation of these laws (ANRF 2013b).

Figure 14.5 Number of municipalities and local laws covering smoking in workplaces, restaurants, and enclosed public places, generally, 1978–2013

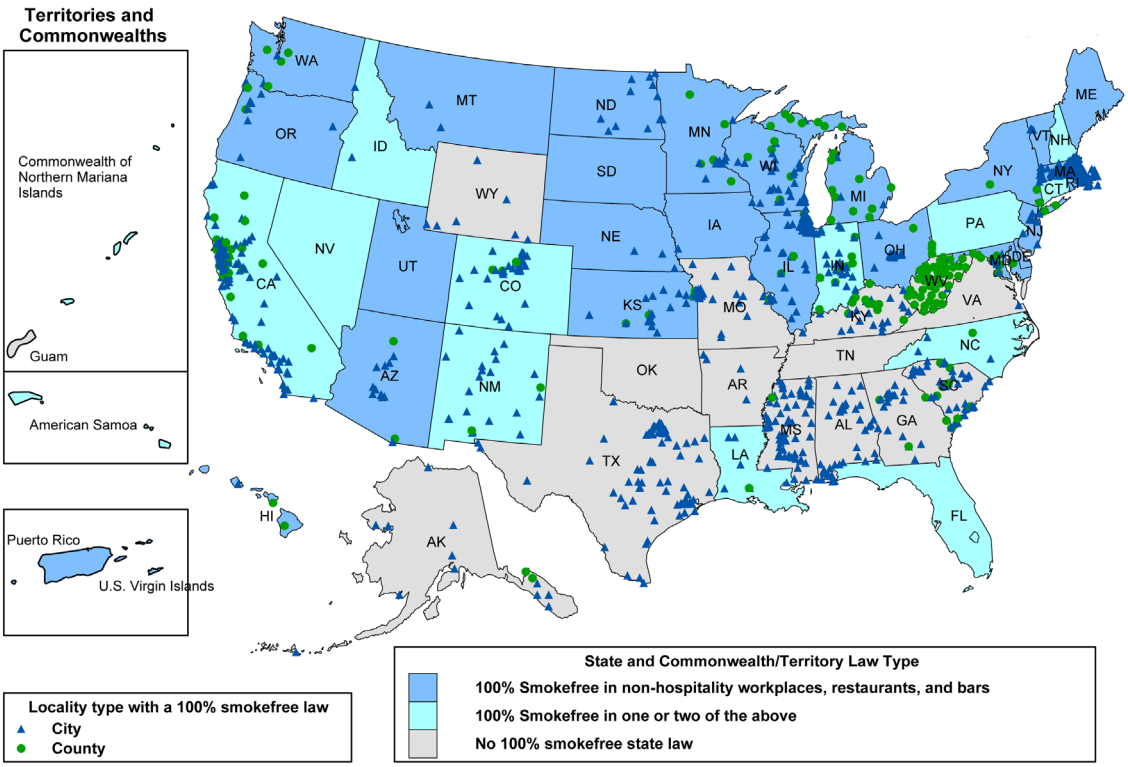


Source: American Nonsmokers' Rights Foundation 2013a.

Many locations are smokefree because they are environments oriented towards youth. According to the CDC School Health Policies and Programs Study for 2006, in that year 70% of states and 95% of school districts, included in a nationally representative sample, prohibited smoking by students in school buildings, grounds, vehicles, and off-campus school-sponsored events (Jones et al. 2007). However, only 47% of the states, but 78% of the school districts, had smokefree schools in which the same restrictions applied to staff (Jones et al. 2007). At least 1,178 U.S. colleges and universities were completely smokefree as of July 8, 2013, which includes having 100% smokefree residential housing policies (ANRF 2012d). On the basis of data from the Tobacco Use Supplement of the Current Population Survey, CDC reported that in 2009 the median proportion (by state) of households with smokefree policies for everyone living in or entering the home was 81% (King et al. 2013). Finally, smoking has been prohibited in vehicles, when children younger than certain ages are present, in nine U.S. cities or counties, six states, Puerto Rico, nine Canadian provinces/territories, and six Australian states (Global Advisors Smokefree Policy 201).

Relatively little evidence is available about sociodemographic disparities in the coverage of smokefree policies in public and private locations. In one study, Skeer and coworkers (2004) examined differences in community characteristics in relation to the strength of their local policies on clean indoor air in public places; they found that towns with higher education levels and greater per capita income were more likely to have the most restrictive policies. Gonzalez and colleagues (2013) found that Hispanics and Asians have benefited more from the rapid spread of clean indoor air laws and non-Hispanic Blacks have benefited less. A CDC report, using 1999–2004 National Health and Nutrition Examination Survey data, found that youth were three to four times as likely as adults to be exposed to secondhand smoke in the home (CDC 2008a). In this study, non-Hispanic Blacks were the most likely and Mexican Americans the least likely to be exposed to secondhand smoke at home (17.9%; 95% CI, 15.2–21.0), and members of low-income families were three times as likely to be exposed, as their counterparts in the highest income group (5.9%; 95% CI, 5.1–7.0). Poverty income ratio was defined as the ratio of family income to the U.S. Census Bureau poverty threshold

Figure 14.6 Map of 100% smokefree laws, United States, May 31, 2013



Source: American Nonsmokers' Rights Foundation 2013b.

accounting for family size. Low income was considered 0–1.3 and high income was considered greater than 3.0.

Policies and laws making indoor workplaces and public places smokefree (i.e., eliminating smoking in all indoor areas with no exceptions) have been found to be highly effective in reducing exposure to secondhand smoke. The impact of smokefree policies on exposure to secondhand smoke has been assessed both through studies of air quality (including studies assessing levels of particulate matter and airborne nicotine) and through studies of self-reported and objectively measured exposure (with the primary objective measure of exposure being cotinine in blood, saliva, or urine). These studies have often focused on air quality in bars and restaurants and exposure to secondhand smoke in nonsmoking employees of these venues. Population-level studies of changes in exposure to secondhand smoke following implementation of smokefree laws have also been carried out. The 2006 Surgeon General's report concluded that workplace smoking restrictions are effective in reducing exposure to secondhand smoke and that eliminating smoking in indoor spaces is the only way to fully protect nonsmokers from exposure to secondhand smoke. The Community Preventive Services Task Force (2012) issued an updated conclusion finding that smokefree policies are effective in reducing exposure to secondhand smoke. A 2010 Cochrane review found that the introduction of smokefree laws leads to a reduction in exposure to passive smoking, with hospitality workers experiencing a greater reduction than the general population (Callinan et al. 2010). IARC (2009) concluded that there is sufficient evidence that implementation of smokefree policies leads to a substantial decline in exposure to secondhand smoke, with air quality studies showing reductions of 80–90% in high-risk settings such as bars. Well-designed studies which collected saliva cotinine samples as part of nationally representative samples of nonsmoking adults and primary school students in Scotland found that exposure to secondhand smoke (as measured by geometric mean cotinine concentrations) fell by 39% in both these groups within 1 year after a national smokefree law took effect in 2006 (Akhtar et al. 2007; Haw and Gruer 2007).

In addition to reducing exposure to secondhand smoke, smokefree policies and laws have also been found to reduce active smoking. The 2006 Surgeon General's report concluded that workplace smoking restrictions lead to less smoking. The 2012 Community Guide's conclusion on the effects of smokefree policies found that these policies reduce the prevalence of tobacco use, increase the number of tobacco users who quit, and reduce tobacco use initiation among young people (Community Preventive Services Task Force 2012). IARC (2009) concluded that there is strong evidence that smokefree workplaces lead to increased successful cessation among smokers and that smokefree policies reduce tobacco use among youth. A 2010 systematic review by the Community Preventive Services Task Force found that smokefree policies were associated with a median 3.4% reduction in tobacco use prevalence and a median 6.4% increase in tobacco use cessation (Hopkins et al. 2010; Task Force on Community Preventive Services 2010). The 2010 Cochrane review found that there is limited evidence about the impact of smokefree laws on active smoking, but that the trend is downward (Callinan et al. 2010).

As of 2013, a summary of progress in implementing smokefree policies includes:

- Smokefree legislation had been adopted by 36 states and over 3,500 municipalities (ANRF 2013b).

- 2,311 states, commonwealths, territories, cities, and counties had a law that restricted smoking in one or more outdoor areas (Americans for Nonsmokers' Rights [ANR] 2012b).

- 4 states prohibit smoking in privately owned vehicles when a child is present (ANR 2012a; CDC 2012d).

- The state of Maine and the city of Boston, Massachusetts, enacted smoking bans in public housing beginning in 2012.

- As of March 31, 2013, there were a total of 19 states with smokefree policies on public school campuses (K–12) (CDC STATE System, unpublished data). Seven of the 19 states also had smokefree policies on private school campuses (K–12). Three states (Arkansas, Iowa, and Oklahoma) banned smoking on public college campuses; and Iowa also had a smokefree policy for private college campuses. Iowa was the only state with smokefree policies for all four types of campuses: private and public schools (K–12) and colleges.

- In 2008, 45% of U.S. hospitals had a smokefree campus policy, with an additional 15% of hospitals pursuing smokefree policies (Williams et al. 2009). As of 2012, 4 national hospitals, clinics, insurers, and health service companies had adopted smokefree policies nationwide that extend to all sites; 3,419 local and/or state hospitals, health care systems, or clinics had adopted smokefree campus grounds; and 105 psychiatric hospitals had adopted smokefree indoor air policies (ANRF 2013f). A total of 34 states banned smoking in hospitals (CDC 2012d). Of these, three states (Arkansas, Illinois, and North Dakota) have designated smoking areas on hospital campuses. Eight states or territories and 154 municipalities have enacted smokefree indoor air laws in nursing homes, in addition to 64 individual nursing homes across the country (ANRF 2013e).

- In 2004, the Federal Bureau of Prisons made all federal facilities 100% smokefree, restricting smoking by correctional facility inmates, employees, and visitors. Nearly all states have adopted smokefree and/or tobacco-free policies in correctional facilities also. Correctional facilities in 19 states are smokefree and tobacco-free indoors and outdoors, 15 states are smokefree and tobacco-free indoors, 1 state and 1 territory are smokefree indoors and outdoors, and 12 states are smokefree indoors only (ANRF 2013c).

- DoD and all of the armed forces except the Coast Guard have set goals to increase tobacco-free areas, but have yet to achieve them despite promoting tobacco-free lifestyles through public education campaigns, commander training, the banning of all tobacco use during basic training, and the prohibition of tobacco use by instructors in the presence of students. A report by IOM, *Combating Tobacco in Military and Veteran Populations* (IOM 2009), provides an update on these efforts to promote tobacco-free environments in the military.

- Reviews by CDC (2010) have shown where the greatest levels of disparity in exposure to secondhand smoke remain. These areas of disparity include many states without comprehensive smokefree legislation, and among lower socioeconomic status populations, and service and hospitality workers.

Regulations on Youth Access

One component in a comprehensive strategy to prevent smoking among youth is restricting the supply of cigarettes to minors (CDC 2007a; USDHHS 2012). Youth can obtain cigarettes in two ways: commercially (from a store or vending machine) and socially (borrowing, buying, or stealing them from other youth or adults). A variety of strategies aim at restricting commercial access, and these strategies, in turn, can limit social access by reducing the total number of cigarettes accessible to youth (USDHHS 2012).

The three possible strategies for encouraging compliance with age-of-sale laws are taking appropriate steps in the retail environment, educating merchants, and actively enforcing the laws. Taking appropriate steps in the retail environment includes requiring tobacco products to be located behind the counter, posting signage informing customers that it is illegal for minors to purchase tobacco, and banning vending machines and self-service sales (Forster and Wolfson 1998). Taking these steps possibly reduces the likelihood that youth will obtain cigarettes, even if the store's clerk is inattentive. Education of merchants is an attempt to inform retailers of the laws; it is assumed that educated retailers would be less likely to sell cigarettes to minors (Rigotti 1999). Self-enforcement and education of merchants are not enough, however, to prevent minors from purchasing tobacco from commercial establishments (USDHHS 2012); penalties and improved enforcement of laws are needed. Penalties for selling tobacco to minors include revoking store licenses, and fining merchants and clerks who sell to youth, both of which are usually done after a random compliance check.

The IOM report recommends requiring state licensing of all retail outlets that sell tobacco products to verify the age of purchasers, including banning the use of self-service displays and vending machines, restricting direct access to tobacco products, and selling products only in a face-to-face exchange (Bonnie et al. 2007). During the past 10 years, two states have adopted tobacco retail outlet licensing requirements (CDC 2012d). In March 2010, FDA published a final regulation restricting the sale and distribution of cigarettes, cigarette tobacco, and smokeless tobacco. Requirements in this regulation included: prohibition of the sale of tobacco products to children younger than 18 years of age; a need for proof of age by photo identification for purchasers younger than 27 years of age; prohibition of the sale of tobacco products in vending machines, self-service displays, or other impersonal modes of sale, except in very limited circumstances; prohibition of free samples of cigarettes and limitation on the distribution of free samples of smokeless tobacco products to certain facilities; and prohibition of the sale of cigarettes in packets of fewer than 20 cigarettes (USFDA 2010c). FDA is enforcing these provisions through state contracts and other enforcement activities. Retailer penalties can include warning letters, civil money penalties (fines), and no-tobacco sales order.

The 2012 Surgeon General's report reviewed the efficacy of interventions to prevent the sale of tobacco products to underage youth in detail and concluded that the data are mixed on whether interventions to restrict access can lead to a reduction in the number of retailers selling tobacco to minors. However, it was noted that the Community Preventive Services Task Force (2005) concluded that community mobilization, combined with additional interventions—such as stronger local laws directed at retailers, active enforcement of retailer sales laws, and retailer education with reinforcement—are recommended. A comprehensive review also supports the efficacy of enforced reductions in the sales of cigarettes to minors (DiFranza 2011).

Bans and Restrictions on Advertising and Promotion

In discussing advertising, it is important to clarify what it is and what it is not (Richards and Curran 2002). Advertising is a type of marketing that uses the media to create positive product imagery or associations or to connect the product with desirable personal traits, activities, or outcomes (Richards and Curran 2002). Marketing can be defined as the mix of all activities designed to increase sales (including both advertising and promotional activities). Advertising, for example, could take the form of ads in print; such an ad might show attractive couples smoking cigarettes in an appealing environment. Promotional activities usually do not rely on advertising and can take a variety of forms, including reducing the price paid by consumers. Price promotion may take the form of coupons, merchandise add-ons, and free samples. Another form would be allowances paid to retailers to increase their profit margins; in return, the retailer places the tobacco products in favorable places within the store. The retailer could pass the promotional allowance on to consumers in the form of lower prices. Other types of promotion include sponsoring events, selling or distributing branded items, and contests that encourage user participation in exchange for prizes.

According to FTC (2012), in 2010 more than $8 billion was spent on cigarette advertising and promotion in the United States. This sum spent on advertising and

promotions threatens public health, as it increases overall smoking and encourages youth to begin to smoke (NCI 2008; USDHHS 2012). The tobacco industry and consultant researchers (e.g., Heckman et al. 2008) contend that there is no definitive research showing that advertising increases smoking; however, this claim is countered by longitudinal research (NCI 2008) and strong empirical evidence, including the tobacco industry's own internal documents and trial testimony, that there is a consistent dose-response relationship between the marketing and promotional efforts by tobacco companies and the initiation and progression of tobacco use among young people (USDHHS 2012). Also, from a cost-benefit point of view, the potential public health advantages and associated economic gains (such as in long-term worker productivity) of banning cigarette advertising are far greater than the private costs to tobacco companies and advertisers of any lost revenues; consequently, it has been suggested that an advertising ban would be sensible from an economic perspective (NCI 2008). As concluded in NCI Monograph 19: "The studies of tobacco advertising bans in various countries show that comprehensive bans reduce tobacco consumption. Non-comprehensive restrictions generally induce an increase in expenditures for advertising in 'non-banned' media and for other marketing activities, which offset the effect of the partial ban so that any net change in consumption is minimal or undetectable" (NCI 2008, p. 281).

Although the evidence reviewed in NCI Monograph 19 supports the efficacy of comprehensive bans on advertising, other evidence continues to emphasize the importance of reducing existing levels of advertising and promotions in this country, particularly in any form or setting where young people can be exposed. Specifically, the 2012 Surgeon General's report concluded that "the evidence is sufficient to conclude that there is a causal relationship between advertising and promotional efforts of the tobacco companies and the initiation and progression of tobacco use among young people" (p. 602). This report reviewed the evidence that the tobacco industry has used a mixture of actions to alter the prices of their products, including a variety of price-reducing promotions, and that these actions attract price-sensitive populations such as youth to their products, as well as soften the price impact on consumers of increases in federal and state tobacco excise taxes. In addition to pricing policies, the report reviewed the evidence that tobacco manufacturers have employed a wide range of advertising, marketing, and promotional initiatives which have been shown to be key factors in initiation and progression of tobacco use among youth and young adults. The report reviewed the evidence that tobacco advertising and promotion, particularly those initiatives containing imagery which associates positive qualities with tobacco use and impacts attitudes about smoking, intentions to smoke, and actual smoking behavior among youth. Finally, in addition to advertising and promotions, the 2012 report cited evidence that the tobacco industry has invested heavily in packaging design and brand imagery on packages, which is especially influential during adolescence and young adulthood when smoking behavior and brand preferences are being developed.

At present, the tobacco retail environment serves unique roles in industry marketing and promotional activities. The 2012 Surgeon General's report (USDHHS 2012) found that the presence of heavy cigarette advertising in convenience stores, especially in predominately ethnic and low-income neighborhoods, increases the likelihood of exposing youth to prosmoking messages, which can increase initiation rates among those exposed, particularly if stores are near schools. Therefore, based upon the findings in the 2012 report, local policies and approaches to reduce point-of-purchase advertising and promotions have increased.

As many forms of direct advertising and promotion of tobacco products have been curtailed, it has been noted that the entertainment media are among the few remaining channels for transmission of aspirational images of smoking to large audiences (Kline 2000). The billions of impressions of tobacco use that movies deliver (Figure 14.3B), combined with the fact that conventional cigarette advertising on television and radio has been banned since 1971, and billboards banned and other forms of cigarette advertising directed at youth severely restricted since 1999 by the MSA, emphasizes the importance of onscreen smoking in the movies as one of the largest remaining unrestricted traditional media channels promoting smoking and tobacco use to youth. The 2012 Surgeon General's report reviewed the historical links between the tobacco companies and the movie industry. Evidence from tobacco company documents has provided confirmation of a commercial relationship between the tobacco industry and film studios that began in the 1920s and continued into the 1970s after cigarette advertising was banned on television (Mekemson and Glantz 2002; Lum et al. 2008). As reviewed in the 2012 report, it appeared that voluntary policies by three of the major motion picture studios had all but eliminated smoking from their youth-rated films. It has been suggested that controlling for rating, budget and other factors, on average movies with smoking make less money than smokefree movies (Glantz and Polansky 2011). However, data from 2011 and 2012 (Figure 14.3A) suggest that this decline has reversed (Glantz et al. 2012; McAfee and Tynan 2012). Based on the findings in the 2012 Surgeon General's report that there is a causal relationship between the depictions of smoking in the movies

and initiation of smoking among young people, actions that would eliminate depiction of tobacco use in movies that are produced and rated as appropriate for children and adolescents could have a significant effect toward preventing youth from becoming tobacco users.

The *2009 Prevent All Cigarette Trafficking* (PACT) *Act* closed a loophole enabling individuals to purchase tobacco products via the Internet or mail without paying the appropriate taxes. The PACT Act ensures the collection of federal, state, and local tobacco taxes on cigarettes and smokeless tobacco products sold via the Internet or other mail-order sales and makes tobacco products not mailable by the U.S. Postal Service (Campaign for Tobacco-Free Kids 2010). It also restricts youth access to tobacco products via Internet and mail-order sales by requiring age verification prior to sale and upon delivery.

Tobacco Product Litigation

When the nation's first Surgeon General's report on smoking and health was released in 1964, litigation against cigarette manufacturers concerning the health effects of their products had been ongoing for 10 years. It would take an additional 30 years until tobacco litigation began to have a deep impact on the landscape of tobacco control. This history of tobacco product litigation is described in more detail online at www.surgeongeneral.gov in Appendix 14.2. Additionally, a summary of major tobacco litigation cases is also provided online in Appendix 14.3.

Litigation against tobacco companies has proven to be a tool for advancing the fundamental public health goal of tobacco control—reducing the morbidity and mortality caused by tobacco products. It can contribute to tobacco control in several ways:

- Tobacco litigation has offered an opportunity to shed light on the practices of tobacco manufacturers by exposing once-secret internal documents and giving a voice to former industry insiders (Bero 2003).

- The media coverage of tobacco litigation serves to educate and reinforce messaging about the health risks associated with the use of tobacco products (Dunlop and Warner 2010).

- Litigation, when successful, can lead to increases in price due to the high cost of verdicts or settlements to manufacturers, which results in reduced consumption of tobacco products, particularly among youth (Chaloupka and Pacula 2001).

- Very large punitive damages have the potential to encourage manufacturers to examine their practices and change behaviors that could trigger such monetary sanctions (Table 14.3) (Guardino and Daynard 2005).

- Settlements may include provisions that restrict marketing practices that might be difficult to achieve through legislation (Jacobson and Warner 1999).

- Litigation complements other tobacco control efforts and can serve as a public reminder of the need for state and federal policy interventions (Vernick et al. 2007).

- By focusing on the conduct of the manufacturers and their role in the injuries at issue, tobacco litigation plays an important role in denormalizing the industry and its practices that contribute to the toll of tobacco use on public health (Vernick et al. 2007).

State Attorney General Cases

The 2000 Surgeon General's report and Appendix 14.2 (found online at www.surgeongeneral.gov) provide a summary of several of the most influential cases, including the State Attorney General cases, which started in 1994. The first four of these lawsuits against the tobacco industry to recover health care expenditures for treating tobacco-related ailments of Medicaid recipients were brought by Mississippi, Minnesota, Florida, and Texas. In each of these first four cases, the tobacco industry settled separately with the state. All together, the four settlements resulted in the tobacco industry agreeing to pay a total of $35.3 billion over a 25-year period (Miura et al. 2006).

Shortly after settling separately with Mississippi, Minnesota, Florida, and Texas, the tobacco industry sought to resolve the outstanding state-brought Medicaid reimbursement lawsuits by entering into a comprehensive settlement agreement. On November 23, 1998, the four largest tobacco companies (Brown & Williamson, Lorillard, Philip Morris, and R.J. Reynolds) entered into the MSA with the remaining 46 states and five territories. They entered into this agreement after failing to reach a congressionally brokered global settlement, which would have given the tobacco industry certain immunities from liability going forward (Givel and Glantz 2004).

Under the MSA, the tobacco industry agreed to make annual payments to the states for a 25-year period in return for each state abandoning its Medicaid reimbursement claim. By 2012, the participating tobacco companies

Table 14.3 Punitive damages in tobacco litigation

Case name	State	Verdict year	Punitive damages award	Final status of award
Henley v. Philip Morris	CA	1999	$50 million	$9 million
Williams v. Philip Morris	OR	1999	$79.5 million	$79.5 million
Whiteley v. RJR, Philip Morris	CA	2000	$250,000	$250,000
Engle v. R.J. Reynolds, et al.	FL	2000	$144.8 billion	$0
Boeken v. Philip Morris	CA	2001	$3 billion	$50 million
Burton v. Philip Morris	KS	2002	$15 million	$0
Schwarz v. Philip Morris	OR	2002	$150 million	$25 million*
Bullock v. Philip Morris	CA	2002	$28 billion	$28 million
Boerner v. Brown and Williamson Corp.	AR	2003	$15 million	$15 million
Price v. Philip Morris	IL	2003	$3 billion	$0
Frankson v. Brown and Williamson Corp.	NY	2004	$20 million	$5 million
Smith v. Brown and Williamson Corp.	MO	2005	$20 million	$1.5 million
Evans v. Lorillard	MA	2010	$81 million	$81 million*

*On appeal as of December 2012.

had paid the states approximately $87 billion in MSA payments, not including payments to the four states that settled separately (National Association of Attorneys General 2012). On average, the tobacco industry pays each participating state and territory about $120 million in MSA payments annually. After the initial 25-year period elapses, the tobacco industry will continue to make annual payments to the states based on domestic cigarette sales.

The MSA, however, did not require states to earmark the tobacco industry's payments for tobacco control programs; the attorneys general who negotiated the settlement did not have the power to do so. As a result, most states use their MSA payments for general purposes, unrelated to public health. In 1999, CDC published guidelines recommending the amount states should spend on tobacco cessation and prevention efforts (CDC 1999, 2012e). Only a few states spend the CDC's recommended amount on tobacco control (CDC 2007a; American Lung Association 2012). The MSA also specifies that at least $1.65 billion of the states' recovery would be directed to create an independent public health foundation to conduct programs to reduce youth tobacco use. This foundation, which became the American Legacy Foundation (Legacy), was established in 1999. Starting in 2000, Legacy implemented the national truth® campaign—a mass media countermarketing effort focused on preventing youth smoking. Legacy also provided over $120 million in grant funding to support state and local tobacco control efforts.

In addition to the monetary payments, the MSA included provisions directly benefiting the public health, such as prohibitions or restrictions on: outdoor advertising, distribution of promotional merchandise, sponsorship of public events, targeting underage smoking, and political lobbying. The MSA also improved access to the tobacco industry's documents by requiring the companies to fund, and update for 10 years, a searchable Web site containing millions of documents produced in litigation; however, in practice, the availability of the documents was only practical when Legacy established the Legacy Tobacco Documents Library at the University of California at San Francisco.

It has been suggested that one of the greatest public health consequences of the MSA was the tobacco industry's decision to increase cigarette prices after execution of the MSA (Cutler et al. 2002). To cover the initial payments to the states and payments for the tobacco control programs under the MSA, the tobacco industry had to increase the price of cigarettes. The increase in cigarette retail prices created a decline in cigarette sales of about 10% over the next couple of years, with the most significant decrease in consumption by younger adults (Daynard et al. 2001; Sloan and Trogdon 2004). Although the MSA

was not able to earmark payments to states for tobacco control programs, it appears to have had a large overall impact on tobacco control and public health through payments to states, restrictions on marketing methods, and substantial funding of tobacco control and public health programs. More specifically, the landmark settlement also included the establishment of a national public health education foundation with resources dedicated exclusively to reducing the tobacco epidemic, and thus, is widely recognized as one of MSA's lasting legacies. That entity—the American Legacy Foundation—has been a leader in using national mass media to help increase antitobacco-related knowledge, attitudes, beliefs, and behaviors among youth and adults. In its first 2 years alone (2000–2002), 22% of the overall decline in youth smoking was attributed to Legacy's bold truth® campaign (Farrelly et al. 2005, 2009). Legacy's national efforts have been particularly important in states which failed to invest even the minimum expenditures recommended by CDC in 1999 for tobacco control and prevention programs.

United States v. Philip Morris, Inc. (Department of Justice Case)

On September 22, 1999, the U.S. Department of Justice (DOJ) filed a civil suit against the major U.S. tobacco companies in the U.S. District Court for the District of Columbia (Douglas et al. 2006; Guardino et al. 2007). The 11 defendants in this case were: Philip Morris, Inc., now Philip Morris USA, Inc. ("Philip Morris"); R.J. Reynolds Tobacco Co., now Reynolds American ("R.J. Reynolds" or "RJR"); Brown & Williamson Tobacco Co., now part of Reynolds American ("Brown & Williamson" or "B&W"); Lorillard Tobacco Company ("Lorillard"); the Liggett Group, Inc. ("Liggett"); American Tobacco Co., merged with Brown & Williamson, which is now part of Reynolds American ("American Tobacco"); Philip Morris Cos., now Altria ("Altria"); B.A.T. Industries p.l.c. ("BAT Ind."), now part of BATCo, British American Tobacco (Investments) Ltd. ("BATCo"); The Council for Tobacco Research—U.S.A., Inc. ("CTR"); The Tobacco Institute, Inc. ("TI"). In the suit, DOJ alleged that the tobacco industry conspired to defraud the public by knowingly producing harmful and addictive products and by deliberately misrepresenting the risks of their products, in violation of the *RICO* Act (Douglas et al. 2006; Guardino et al. 2007). DOJ also originally sought to recover tobacco-related medical costs paid by the federal government; but in 2000 the district court dismissed the medical-recovery claims (*U.S. v. Philip Morris Inc.,* 116 F. Supp. 2d 131 (D.D.C. 2000)). The relief the government sought under the *RICO* statute included a permanent injunction to restrain the tobacco industry from committing future fraud and misrepresentation; and an order compelling the cigarette manufacturers to disgorge the ill-gotten profits from their unlawful conduct. During the trial an appellate court ruled in 2005 that disgorgement of the defendants' proceeds was not permitted as a remedy under the civil provisions of the *RICO* Act (*U.S. v. Philip Morris USA Inc., 39*6 F.3d 1190 (D.C. Cir. 2005)). The appellate court later ruled, based on the 2005 disgorgement decision, that other monetary remedies, such as smoker cessation programs and a counter-marketing campaign, were also not available under the civil provisions of the *RICO* statute (*U.S. v. Philip Morris USA Inc.,* 566 F.3d 1095 (D.C. Cir. 2009) (per cieriam)).

The trial was split into a liability phase, which began on September 21, 2004, nearly 5 years after DOJ had filed the suit, and a remedies phase, which began on May 2, 2005 (Guardino et al. 2007). Presentation of evidence ended on June 2, 2005, and closing arguments ended on June 9, 2005 (Guardino et al. 2007). Not including subsequent appeals, the case involved "the exchange of millions of documents, the entry of more than 1,000 Orders, and a trial which lasted approximately 9 months with 84 witnesses testifying in open court" (*Philip Morris* 449 F. Supp. 2d at 1).

U.S. District Court Judge Gladys Kessler entered her final opinion and order on August 17, 2006, and found that the tobacco industry defendants violated the *RICO* Act by lying, misrepresenting, and deceiving the public "including smokers and the young people they avidly sought as 'replacement smokers,' about the devastating health effects of smoking and environmental tobacco smoke" (*Philip Morris* 449 F. Supp. 2d at 1). Based on the trial evidence Judge Kessler found that the tobacco industry established an enterprise "to accomplish the following goals: counter the growing scientific evidence that smoking causes cancer and other illnesses, avoid liability verdicts in the growing number of plaintiffs' personal injury lawsuits against Defendants, and ensure the future economic viability of the industry" (*Philip Morris* 449 F. Supp. 2d at 34).

Judge Kessler found the tobacco industry liable for perpetrating seven fraudulent schemes. The findings of this case have had a profound and continuing impact on public opinion and public policy. The *Tobacco Control Act* incorporates as congressional findings of fact Judge Kessler's determinations that "the major United States cigarette companies continue to target and market to youth," that the companies sought to "encourage youth to start smoking subsequent to the signing of the Master Settlement Agreement in 1998," and that they "have designed their cigarettes to precisely control nicotine delivery levels and provide doses of nicotine sufficient to create and sustain addiction while also concealing much of their nicotine-related research" (*Tobacco Control Act* 2009, §2(47)

– (49)). The Sixth Circuit cited Judge Kessler's findings of facts extensively in its 2012 decision upholding the constitutionality of several key provisions (although striking down other provisions) of the statute (*Discount Tobacco City & Lottery, Inc. v. United States,* 674 F.3d 509 (6th Cir. 2012, *cert. denied,* 133 S. Ct. 1966 (2013)). A summary of Judge Kessler's monumental 1,700-page Opinion has been completed, primarily using a compilation of select quotes from the Opinion (Tobacco Control Legal Consortium 2006). Specifically, Judge Kessler found that the tobacco industry defendants had:

- The tobacco industry defendants have *"Publicly denied, distorted, and minimized the hazards of smoking for decades"* (*Philip Morris* 449 F. Supp. 2d at 146). In this section of the Opinion, Judge Kessler explains that the evidence shows that the Defendants (see footnote[a]) knew for fifty years or more that cigarette smoking caused disease, but repeatedly denied that smoking caused adverse health effects ("The Hazards of Smoking," Tobacco Control Legal Consortium 2006).

- *"Since the 1950s, Defendants have researched and recognized, decades before the scientific community did, that nicotine is an addictive drug, that cigarette manufacturers are in the drug business, and that cigarettes are drug delivery devices."* In this section of the Opinion, Judge Kessler discusses the evidence that for over 40 years, the Defendants' research had shown that the nicotine in tobacco causes cigarette smoking to be addictive. Judge Kessler addresses the evidence that the Defendants not only publicly denied that smoking is addictive but also withheld information about their research from the American public, the government, and the public health community, including the United States Surgeon General. Judge Kessler explains that the evidence shows the Defendants acted this way to maintain profits by keeping people smoking and attracting new consumers, to avoid liability, and to prevent regulation of the industry ("Addiction," Tobacco Control Legal Consortium 2006) (*Philip Morris* 449 F. Supp. 2d at 208).

- *"Defendants have designed their cigarettes to precisely control nicotine delivery levels and provide doses of nicotine sufficient to create and sustain addiction."* In this section of the Opinion, Judge Kessler discusses evidence showing that the Defendants control the nicotine levels in cigarettes to ensure that smokers become addicted and stay addicted. Judge Kessler explains that, although the Defendants deny publicly that they manipulate or control the nicotine levels, the facts prove otherwise ("Nicotine Levels," Tobacco Control Legal Consortium 2006) (*Philip Morris* 449 F. Supp. 2d at 309).

- Defendants falsely marketed and promoted low tar/light cigarettes as less harmful than full flavor cigarettes in order to keep people smoking and sustain corporate revenues" (*Philip Morris* 449 F. Supp. 2d at 430). In this section of the Opinion, Judge Kessler explains that, since the 1970s, Defendants have misled consumers into believing that so-called "low tar" and "light" cigarettes are healthier than other cigarettes and are an acceptable alternative to quitting. The Defendants do this even though they have known for decades that light cigarettes offer no clear health benefit. Judge Kessler describes how the Defendants dramatically increased their sales by exploiting consumers' belief that light cigarettes are less harmful, while claiming falsely that their marketing is based only on smokers' preference for a lighter taste. Judge Kessler finds that the Defendants are continuing to make these false and misleading claims in order to reassure smokers and dissuade them from quitting ("Light Cigarettes," Tobacco Control Legal Consortium 2006).

- *"The evidence is clear and convincing – and beyond any reasonable doubt – that Defendants have marketed to young people twenty-one and under while consistently, publicly, and falsely, denying they do so"* (*Philip Morris* 449 F. Supp. 2d at 391). In this section of the Opinion, Judge Kessler discusses the evidence showing that the Defendants tracked youth behavior and used the information to create highly sophisticated marketing campaigns to get young people to start smoking and continue smoking. Judge Kessler explains that the Defendants sought to remain profitable by bringing new, young smokers into the market to replace those who die or quit ("Marketing to Youth," Tobacco Control Legal Consortium 2006).

- Defendants' statements about secondhand smoke sought "to deceive the public, distort the scientific record, avoid adverse findings by government agencies, and forestall indoor air restrictions" (*Philip Morris* 449 F. Supp. 2d at 693). In this section of the Opinion, Judge Kessler explains that the evidence shows that the Defendants have long known that secondhand smoke, or environmental tobacco

smoke, is hazardous to nonsmokers and that Defendants have understood how this information could affect the tobacco industry's profitability. Judge Kessler describes the steps the Defendants took, after promising to support objective research on the issue, to undermine independent research efforts, to fund industry-friendly research, and to suppress and trivialize unfavorable research results. Judge Kessler emphasizes that the evidence shows that the Defendants continue to deny the extent to which secondhand smoke is hazardous to nonsmokers ("Secondhand Smoke," Tobacco Control Legal Consortium 2006) (*Philip Morris* 449 F. Supp. 2d at 208).

- "*Defendants attempted to and, at times, did prevent/stop ongoing research, hide existing research, and destroy sensitive documents in order to protect their public positions on smoking and health, avoid or limit liability for smoking and health related claims in litigation, and prevent regulatory limitations on the cigarette industry"* (*Philip Morris* 449 F. Supp. 2d at 801). In this section of the Opinion, Judge Kessler discusses the evidence that for over 50 years, the Defendants tried to protect themselves from litigation and regulation by (1) suppressing and concealing scientific research, (2) destroying documents, and (3) shielding other documents from public view by asserting that they were "privileged" and protected by law. Judge Kessler explains that the Defendants' destruction of documents makes it impossible to know what materials once existed ("Suppression of Information," Tobacco Control Legal Consortium 2006).

Based on these findings, Judge Kessler determined that they were reasonably likely to continue engaging in fraud and deceit, and accordingly ordered a number of remedies (*Philip Morris* 449 F. Supp. 2d at 908). The specific remedies included prohibiting them from using brand descriptors (such as light, low-tar, mild, ultra light, and natural), which portray a healthier cigarette; requiring them to issue public "corrective statements" on the health consequences of smoking, cigarette addiction, industry manipulation of cigarettes as nicotine delivery devices, and the hazards of light and low-tar cigarettes; extending the defendants' obligation to maintain the Minnesota depository and their online document web/sites for tobacco documents for 15 additional years; and permanently enjoining (i.e., prohibiting) the defendants from "making, or causing to be made in any way, any material, false, misleading, or deceptive statement or representation. . . that is disseminated to the United States public and that misrepresents or suppresses information concerning cigarettes" (*Philip Morris* 449 F. Spp. 2d at 938). On May 22, 2009, the D.C. Circuit upheld Judge Kessler's findings of fact, her determination of liability, and the majority of the remedies she ordered, and on June 28, 2010, the Supreme Court declined to accept review of the case, exhausting the cigarette companies' appeals (*Philip Morris* 566 F.3d, 2009, *cert. denied*, 130 S. Ct. 3501).

The Court of Appeals affirmed Judge Kessler's determinations that the cigarette manufacturers engaged in deliberate deception, with "specific intent" to defraud consumers (*Philip Morris* 566 F.3d, 2009, *cert. denied*, 130 S. Ct. 3501). In rejecting the companies' claims that their deliberately false and misleading statements were protected First Amendment "free speech," the D.C. Circuit stressed that the companies "knew of their falsity at the time and made the statements with the intent to deceive," and observed, "we are not dealing with accidental falsehoods, or sincere attempts to persuade; Defendants' liability rests on deceits perpetrated with knowledge of their falsity" (*Philip Morris* 566 F.3d, 2009, *cert. denied*, 130 S. Ct. 3501). Based on the cigarette companies' demonstrated "proclivity for unlawful conduct," the D.C. Circuit substantially affirmed Judge Kessler's remedies (*Philip Morris* 566 F.3d, 2009, *cert. denied*, 130 S. Ct. 3501).

In 2011, the cigarette companies asked the district court to vacate its findings of fact and remedies (*Philip Morris* 449 F. Supp. 2d at 1), claiming that due to the *Tobacco Control Act* (2009), future fraud and deception was no longer possible. The lower court decisively rejected this motion, observing that "FDA rulemaking is not designed to prevent future racketeering activity covered by *RICO*" (*U.S. v. Philip Morris USA, Inc.,* 787 F. Supp. 2d 68 (D.D.C.) *aff'd,* 686 F. 3d 832 (D.C. Cir. 2012)). The Court of Appeals affirmed, observing that because the possibility of *RICO* liability had not deterred the tobacco companies from engaging in fraud and conspiracy, "the district court reasonably found the defendants were not likely to be deterred by the *Tobacco Control Act* either" (*U.S. v. Philip Morris USA, Inc.,* 686 F.3d 832, 837 (D.C. Cir. 2012) ("Vacatur Opinion")). Thus in 2012, the D.C. Circuit affirmed Judge Kessler's 2011 determination that the cigarette companies remain reasonably likely to continue engaging in fraud and deception (*Philip Morris* 686 F.3d 832). The cigarette companies did not seek Supreme Court review.

Also in 2012, the district court ordered specific text for the tobacco companies to disseminate as "corrective statements" (*U.S. v. Philip Morris USA, Inc.,* 907 F. Supp. 2d 1 (D.D.C. 2012) ("Corrective Statement

Decision"), *appeal docketed,* No. 13-5028 (D.C. Cir. Jan. 30, 2013)). The statements address five specific subjects. As samples, the addiction and nicotine-manipulation statements read:

> A Federal Court has ruled that the Defendant tobacco companies deliberately deceived the American public about the addictiveness of smoking and nicotine, and has ordered those companies to make this statement. Here is the truth:
>
> - Smoking is highly addictive. Nicotine is the addictive drug in tobacco.
> - Cigarette companies intentionally designed cigarettes with enough nicotine to create and sustain addiction.
> - It's not easy to quit.
> - When you smoke, the nicotine actually changes the brain—that's why quitting is so hard. (*Philip Morris,* 686 F.3d 832).
>
> A Federal Court has ruled that the Defendant tobacco companies deliberately deceived the American public about designing cigarettes to enhance the delivery of nicotine, and has ordered those companies to make this statement. Here is the truth:
>
> - Defendant tobacco companies intentionally designed cigarettes to make them more addictive.
> - Cigarette companies control the impact and delivery of nicotine in many ways, including designing filters and selecting cigarette paper to maximize the ingestion of nicotine, adding ammonia to make the cigarette taste less harsh, and controlling the physical and chemical make-up of the tobacco blend.
>
> When you smoke, the nicotine actually changes the brain—that's why quitting is so hard (*U.S. v. Philip Morris USA, Inc.,* 787 F. Supp. 2d 68 (D.D.C. 2011), *aff'd,* 686 F.3d 832 (D.C. Cir. 2012)). The statements are to be disseminated via print and online newspaper advertisements; TV spots; package "onserts"; and the companies' websites (*Philip Morris USA* 449 F. Supp. 2d at 938). They may also be delivered through countertop and header point-of-sale displays, although this would be limited to "participating retailers" in the cigarette companies' retailer-incentive programs (*Philip Morris,* 566 F.3d 1095 (D.D. Cir. 2009) (per curiam)). The cigarette companies have filed an appeal from the corrective-statement decision, contending that it violates their First Amendment free-speech rights.

Clinical and Educational Approaches for Tobacco Cessation

This section reviews the current status of clinical and educational approaches for tobacco cessation. These interventions are reviewed in greater detail within Appendix 14.4 and the efficacy of various pharmaceutical treatments are reviewed in Appendix 14.5 (both available online at www.surgeongeneral.gov). Although the health benefits of smoking cessation have long been documented (USDHEW 1979; USDHHS 1990, 2004; Doll 2004; Doll et al. 2004; Jha et al. 2013), the 2006 NIH State-of-the-Science Conference on Tobacco Use singled out the need to build consumer demand for and more widespread use of proven cessation services as having untapped potential for increasing their reach, use, and impact (Backinger and O'Connell 2007). The 2007 IOM report (Bonnie et al. 2007) emphasized the need to expand treatment use by aligning cessation treatments and the policies that support their use and delivery across all levels of health care and public health systems, and calls for a coordinated, comprehensive strategy to dramatically increase the number of smokers who quit each year (Abrams 2007). The IOM report further stated "systems integration is arguably the single most critical missing ingredient needed to maximize the as yet unrealized potential to significantly increase population cessation rates" (Bonnie et al. 2007, p. 376). Appendix 14.4 of this report provides a review of the current status of efforts to implement these recommendations for a more coordinated and comprehensive strategy for population-based smoking cessation. As reviewed in Appendix 15.1, recent studies model the impact on population quit rates with an integrated implementation of the multiple recommended policies (Levy et al. 2010). Based on a set of assumptions and the implementation of all five policies in combination, this model projected an increase in the baseline population quit rate by 150% (e.g., from about 4.3% baseline up to about 10.9%) (Levy et al. 2010). Although this projected increase has been viewed as optimistic, the

model results suggest that more complete implementation of evidence-based cessation interventions could have large population impacts.

Health Care Policies

In 2009, the U.S. Congress passed the *American Recovery and Reinvestment Act,* which included the *Health Information Technology Economic and Clinical Health (HITECH) Act*. One of the major goals of the HITECH Act was to accelerate the adoption of electronic health records (EHR) through the creation of Medicaid and Medicare EHR Incentive Programs with payments totaling $27 billion over 10 years to "meaningful EHR users" (Office of the National Coordinator for Health Information Technology 2011). In line with the 2008 U.S. Public Health Service recommendations (Fiore et al. 2008), one of the 15 core objectives comprising "meaningful use" in Stage 1 is to "record smoking status for patients 13 years or older" (CMS 2012a). Currently, few studies address the influence of EHR tobacco screening on health care provider and patient behaviors related to smoking cessation (Boyle et al. 2011), but some have shown increases in delivery of the "5A's" (Szpunar et al. 2006; Bentz et al. 2007) or other provider counseling (Spencer et al. 1999), referrals to a quitline (Bentz et al. 2007; Sherman et al. 2008; Linder et al. 2009), and in the proportion of patients setting a quit date (McCullough et al. 2009). Since January 2011, 47 states and territories have launched their Medicaid EHR Incentive Programs (CMS 2012b).

More recent policy changes have focused on improving coverage of tobacco cessation treatment to prevent tobacco-related disease. The 2010 *Patient Protection and Affordable Care Act* included tobacco cessation in several sections related to disease prevention, including prohibiting states from excluding coverage for tobacco-cessation drugs from their Medicaid programs, providing coverage without cost-sharing of tobacco dependence treatment for pregnant women covered by Medicaid, and eliminating copayments for Medicare preventive services that are rated A or B by the U.S. Preventive Services Task Force (USPSTF), including tobacco use counseling for all adults (Koh and Sebelius 2010). An example of this shift to prevention is also evident in the August 2010 Medicare expansion of coverage of smoking and tobacco use cessation counseling to beneficiaries who use tobacco and who do not have signs or symptoms of tobacco-related disease (CMS 2011).

Implementation of the expanded coverage of cessation treatment mandated by Affordable Care Act varies significantly across private health insurance contracts. A 2012 report highlights conflicting language within individual insurance contracts on coverage of tobacco cessation, lack of specificity in scope of coverage in many contracts, inconsistency with USPSTF recommendations, cost-sharing for tobacco cessation counseling, and access restrictions (Kofman et al. 2012).

Although the importance of programs and policies to increase the access to evidence-based cessation assistance and to more fully implement the USPSTF recommendations have been noted in several major reviews (Backinger and O'Connell 2007; Bonnie et al. 2007; Backinger et al. 2010), concerns have been raised that the public resources needed to implement these recommendations could be more efficiently and cost-effectively used to promote successful cessation in other ways such as supporting community-based advocacy efforts to reduce the social acceptability of smoking (Chapman and Mackenzie 2010). In raising these concerns, it has been noted that the importance of increasing the success rate in unaided quitting should be recognized in the discussion of the most effective approaches to reduce smoking rates (Chapman and Mackenzie 2010; Chapman and Wakefield 2013). In the National Tobacco Cessation Collaborative's Consumer Demand Roundtable (Backinger et al. 2010), the important role of combining implementation of the USPSTF recommendations with public policy (McGoldrick and Boonn 2010) efforts, including excise taxes, smoke-free policies (Hyland and Cummings 2010), and media campaigns (Czarnecki et al. 2010) were recognized. This combined and comprehensive approach is considered in more detail in the following section.

Comprehensive Statewide Tobacco Control Programs

Educational and community-wide approaches have long been used in tobacco control to reduce and prevent the initiation of tobacco use (USDHHS 2000). Over time, these initiatives have evolved in their approach, moving toward more comprehensive programs. Comprehensive tobacco control programs are funded as ongoing public health efforts to implement and coordinate evidence-based population-level interventions, (1) prevent initiation of tobacco among youth and young adults, (2) promote quitting among adults and youth (3) eliminate exposure to secondhand smoke (4) identify and eliminate tobacco-related disparities among population groups (CDC 1999, 2007a). A comprehensive approach—one that optimizes synergies from applying a mix of educational, clinical, regulatory, economic, and social strategies—has

been established as the guiding principle for controlling tobacco use. In the United States, comprehensive tobacco control programs are typically organized and funded at the state level, with capabilities such as administrative support, surveillance, and program monitoring and evaluation (CDC 1999, 2007a).

Concurrent with the implementation of multiple community-based intervention trials, a broad national movement to reduce tobacco use began to emerge in the 1980s (USDHHS 2000). However, unlike the community-based intervention trials, the movement and the large-scale interventions that developed from it were not structured around research hypotheses and preplanned evaluation designs. Instead, the movement was characterized by community mobilization at the national, state, and local levels. In addition, the idea that multiple educational (including paid media), taxation, legislative, and regulatory approaches are needed to address the social, economic, and environmental influences on tobacco use was underpinned by established theories and principles of health promotion (Kickbusch 1989; Allison and Rootman 1996; Downie et al. 1996; Nutbeam 1998).

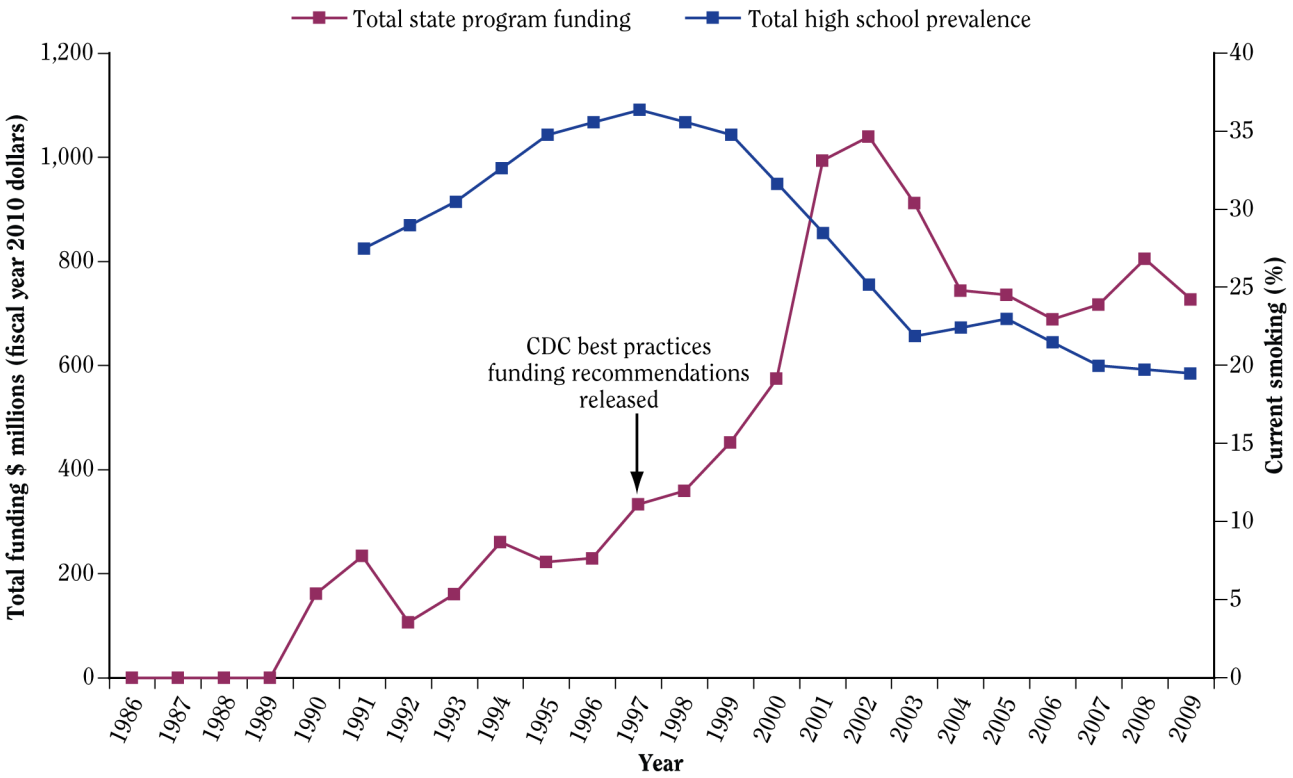
Following the establishment of statewide tobacco control programs in Minnesota in 1985 and California in 1989, comprehensive tobacco control programs began to develop during the 1990s (USDHHS 1994). ASSIST was established in 17 states in 1991 (NCI 2005), and the SmokeLess States coalitions, funded by the Robert Wood Johnson Foundation, were established in 19 states during 1993–2004 (Gerlach and Larkin 2005; NCI 2005). In 1994, CDC funded 32 non-ASSIST states and the District of Columbia through its Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT) program (USDHHS 2000). In 1999, CDC launched the National Tobacco Control Program, which provides financial support and technical assistance for tobacco control programs in all 50 states, the District of Columbia, 8 U.S. territories, 6 national networks, and 8 tribal support centers (CDC 2007). From 2000–2012, Legacy funded a range of competitive grant initiatives including Youth Empowerment (19 states), Priority Populations (over 84 funded programs in over 40 States), Legacy Evaluation Research Network grants, Small Innovative Grants, CDC Match Grants, and Cessation Quitline Grants totaling approximately $120 million. Many of these grants directly supported comprehensive state and local tobacco control programs.

All 50 states and the District of Columbia currently have state tobacco control programs that are funded through various revenue streams, including tobacco excise tax revenues, tobacco industry settlement payments, state general funds, the federal government, and nonprofit organizations (CDC 2012e). Increases in the excise tax on cigarettes from either voter initiatives or state legislation were the mechanism to fund early statewide tobacco control programs. California's program was funded by voter initiatives (1989), as were programs in Massachusetts (1993), Arizona (1994), and Oregon (1996). Many states have also used MSA and other settlement funds to finance statewide programs. In 1997, Florida began a comprehensive program paid for, in part, by funding from the state's settlement with the tobacco industry. Similarly, Mississippi, Texas, and Minnesota used some funds from their individual settlements with the tobacco industry for tobacco control programs. Many of the 46 other states that signed the 1998 MSA also used some settlement funds to finance state-level tobacco control programs; however, this was not specified in the agreement (Campaign for Tobacco-Free Kids 2012a).

States that have made larger investments in comprehensive tobacco control programs have seen larger declines in cigarettes sales than the nation as a whole, and the prevalence of smoking among adults and youth has declined faster, as spending for tobacco control programs has increased (CDC 2007). Figure 14.7 shows the total funding for state tobacco control programs and the prevalence of current smoking among U.S. high school students during 1986–2009. In Florida, a comprehensive program reduced the prevalence of smoking during 1998–2003 among middle and high school students by 50% and 35%, respectively (Bauer et al. 2000). Similarly, during 2001–2010, declines in the prevalence of both adult and youth smoking in New York state outpaced declines nationally, resulting in smoking-attributable personal health care expenditures in 2010 that were $4.1 billion less than they would have been had the prevalence remained unchanged (RTI International 2011). Experience also shows that the longer the states invest in comprehensive tobacco control programs, the greater and faster the impact. In California, which has the nation's first and longest-running comprehensive state tobacco control program, the prevalence of cigarette smoking among adults declined from 22.7% in 1988 to 11.9% in 2010 (California Department of Public Health 2011).

Evidence reviews in prior reports (USDHHS 2000, 2006, 2012), the Community Preventive Services Task Force (Task Force on Community Preventive Services 2005), and IARC Handbooks on Cancer Prevention (IARC 2009; 2011) have documented the efficacy of many of the individual interventions which are combined within comprehensive state tobacco control programs. As noted above in the section on "Tobacco Control Policies," taxation, smokefree indoor air policies, and other policies are among the most effective tobacco control strategies. However, in the evaluation of individual state tobacco control

Figure 14.7 Total funding for state tobacco control programs, 1986–2009 (adjusted to fiscal year 2010 dollars)



Source: Project ImpacTEEN; University of Illinois at Chicago; CDC, Youth Risk Behavior Survey, 1991–2009. Current smoking defined as high school students who smoked on ≥1 of the past 30 days—United States.
Note: **CDC** = Centers for Disease Control and Prevention.

programs where multiple policies and program initiatives are combined, it is often difficult to assess the relative contribution of each one. Nonetheless, several studies have quantified the impact of the policies and programs implemented in these comprehensive tobacco control programs. Table 14.4 summarizes available outcome data for some notable statewide programs, including Arizona, California, Maine, Massachusetts, Minnesota, New York, and Oregon. Additionally, many state programs have experienced, and are facing, substantial cuts to tobacco control funding, resulting in the near elimination of tobacco control programs in those states. In 2010, states were appropriating only 2.4% of their state tobacco revenues for tobacco control, and reaching the CDC's *Best Practices for Comprehensive Tobacco Control Programs* (*Best Practices 2007*) funding goal would have required an additional 13% of tobacco revenues, or $3.1 billion of the $24 billion collected (CDC 2012e). Table 14.5 shows the level of tobacco-related revenues and appropriations, by state, during 1998–2010. In fiscal year 2013, Alaska was the only state to fund its tobacco control program at the CDC-recommended level (Campaign for Tobacco-Free Kids 2012a).

Best Practices 2007 outlined the elements of an evidence-based comprehensive state tobacco control program (CDC 2007). The report recommended four goals for comprehensive statewide tobacco control programs: (1) preventing initiation among youth and young adults; (2) promoting quitting among adults and youth; (3) eliminating exposure to secondhand smoke; and (4) identifying and eliminating tobacco-related disparities among population groups. *Best Practices 2007* also described an integrated programmatic structure for implementing interventions proven to be effective, which includes the following overarching intervention components—state and community interventions, health communication interventions, and cessation interventions. Although these individual intervention components are effective, evidence from the most effective statewide programs indicates that these interventions can have greater impact when they work in concert

Table 14.4 Summary of selected state program components and outcomes

State	Program	Funding	Components	Outcome	Citation
Arizona	• Tobacco Education and Prevention Program • 1997–Present	Proposition 200 in 1994 increased cigarette tax	• Mass media and sponsorships • Local lead agency grants for school education, cessation, protection from environmental tobacco smoke • Quitline • Statewide projects and evaluation	• Prevalence of current smoking decreased from 23.1% in 1996 to 18.3% in 1999 ($p \leq 0.05$) • Prevalence of smokers asked about smoking status by health care provider increased from 30.9% in 1996 to 43.7% in 1999 ($p \leq 0.05$) • Percentage of smokers reporting being asked about smoking status and advised to quit increased from 25.1% in 1996 to 36.7% in 1999 ($p \leq 0.05$)	Wakefield and Chaloupka 2000; CDC 2001
Arizona	• FCP • 1996–2001 • Tucson only	Robert Wood Johnson Foundation	• Community-wide comprehensive program aimed at youth tobacco prevention	• 27% reduction in adolescent smoking between 1996–1999	Levy et al. 2006
California	• California Tobacco Control Program • 1988–Present	1988 California passed Proposition 99 mandating establishment of California Tobacco Control Program; funded by an increased excise tax on cigarettes	• Cessation tools • Mass media campaign • Community program • Smokefree policies	• Per capita cigarette consumption decreased 61% in fiscal years 1989–1990 and 2006–2007 • Adult smoking prevalence decreased from 26.7% in 1987 to 16.7% in 1995; prevalence in 2010 was 11.9% • 2000–2010 youth smoking prevalence decreased from 21.6–13.8% • Lung and bronchus cancer rates declined almost 4 times faster than nationwide rates 1988–2004	USDHHS 2000; Wakefield and Chaloupka 2000; "California Tobacco Control Program Priorities" 2010; Riordan 2012
Maine	• Maine Tobacco Prevention and Control Program • 1997–Present	Funded by legislative bill, H.P. 1357, which increased state excise taxes for cigarettes	• Counter-marketing and public awareness tobacco treatment programs • Community programs • Enforcement programs • School programs • Smokefree policies • Evaluation	• High school smoking prevalence decreased from 39.2% in 1997 to 15.2% in 2011	USDHHS 2000; "History of the Partnership For a Tobacco-Free Maine" 2008; "Maine Policies and Programs" 2008; Riordan 2012

Table 14.4 Continued

State	Program	Funding	Components	Outcome	Citation
Massachusetts	• Massachusetts Tobacco Cessation and Prevetion Program • 1993–Present	1993 voter-approved initiative increased cigarette excise tax by $0.25 and $0.25 increase on wholesale price of smokeless tobacco	• Mass media • School programs • Community programs, including cessation and protection from environmental tobacco smoke • Statewide services, including quitline	• Per capita cigarette consumption decreased by 36% between 1992– 2000, compared to 16% nationwide • High school student prevalence of current smoking decreased 27% in 1995–2001 • Prevalence of adult current smoking decreased from 22.6% in 1993 to 17.9% in 2000	USDHHS 2000; Wakefield and Chaloupka 2000; Riordan 2012
Minnesota	• Minnesota Tobacco Use Prevent and Local Endowment • 1975–Present	Portion of funding from the Master Settlement Agreement and increased excise taxes		• Adult smoking prevalence decreased from 22.1% in 1999 to 16.1% in 2010 • High school students reporting any tobacco use in the past 30 days decreased from 38.7% in 2000 to 27.0% in 2010 • No change in prevalence of cigar use or smokeless tobacco use in 2000–2008, among high school students	USDHHS 2000; Results from the Minnesota Youth Tobacco and Asthma Survey" 2008; "Teens and Tobacco in Minnesota the View from 2008; "Tobacco Use in Minnesota: 2010 Update" 2011
New York	• New York State Department of Health Tobacco Control Program • 2000–Present	Funding generated from tax revenue and the Master Settlement Agreement	• Cessation tools • Mass media campaigns • Community programs	• 53.5% reduction in high school current smoking in 2000– 2010 • Adult smoking decreased from 21.6% in 2000 to 15.5% in 2010	"Youth Prevention and Adult Smoking in New York" 2011; Riordan 2012; USDHHS 2012
Oregon	• Tobacco Prevention and Education Program • 1996–Present	Measure 44 increased excise tax on cigarettes	• School programs • Statewide and community projects • Quitline	• Adult smoking prevalence decreased from 23.4% in 1996 to 21.9% in 1998	USDHHS 2000; Wakefield and Chaloupka 2000; Tobacco Prevention and Education Program 2010

Note: **CDC** = Centers for Disease Control and Prevention; **FCP** = Full Court Press; **USDHHS** = U.S. Department of Health and Human Services.

Table 14.5 Total state tobacco-related revenues (in millions of dollars)—United States, 1998–2010

State	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total (1998–2010)
Alabama	68.3	65.4	227.7	167.3	176.2	153.9	166.1	252.6	245.3	243.0	247.8	252.9	229.9	**2,496.3**
Alaska	28.4	58.7	62.7	61.6	64.1	60.0	62.4	70.1	77.4	84.2	98.6	99.8	92.4	**920.5**
Arizona	166.1	163.1	308.3	247.8	264.0	299.3	366.9	376.1	379.1	440.8	504.5	489.8	427.9	**4,433.7**
Arkansas	83.3	81.5	79.3	222.6	134.2	131.5	180.1	179.8	179.8	172.3	183.0	207.3	251.9	**2,083.7**
California	61.2.1	1,431.6	1,856.1	1,884.2	1,977.9	1,783.7	1,823.7	1,837.8	1,837.8	1,773.6	1,787.0	1,826.6	1,601.2	**21,966.3**
Colorado	59.6	122.8	137.3	141.4	151.1	133.5	139.7	202.4	202.4	285.3	299.5	302.0	269.5	**2,530.2**
Connecticut	120.6	204.5	215.2	227.6	282.6	357.9	392.9	372.4	372.4	366.9	470.8	462.3	509.2	**4,358.8**
Delaware	22.7	42.5	47.1	50.3	55.2	58.1	96.2	106.4	106.4	110.5	147.4	156.2	157.0	**1,157.5**
District of Columbia	17.5	45.5	52.0	53.2	58.3	55.5	59.6	59.0	59.0	58.6	66.0	80.5	70.9	**734.7**
Florida	1,000.0	959.5	1,059.3	1,163.1	1,192.0	966.9	785.8	815.8	815.8	819.2	803.1	808.6	1,598.9	**12,788.7**
Georgia	85.1	199.1	224.2	230.8	246.5	222.3	370.5	382.9	382.9	366.8	370.6	380.1	340.4	**3784.8**
Hawaii	32.4	66.7	72.5	88.3	105.6	106.0	115.4	121.5	121.5	125.3	157.6	164.8	170.8	**1,447.8**
Idaho	25.0	41.0	45.3	45.4	48.6	45.3	68.6	68.3	68.3	69.4	74.7	74.9	65.5	**739.3**
Illinois	457.2	700.7	745.6	752.9	786.7	912.6	1,021.0	934.8	934.8	884.9	904.5	902.8	833.6	**10,742.6**
Indiana	118.1	210.6	230.4	233.9	251.6	456.5	458.0	458.0	458.0	477.9	653.1	655.7	583.4	**5,245.6**
Iowa	94.6	132.5	141.0	142.2	148.2	138.5	141.6	142.9	142.9	174.6	304.9	297.4	274.7	**2,273.3**
Kansas	52.6	89.5	97.5	99.5	105.6	164.6	172.7	170.9	170.9	165.7	178.9	179.8	160.5	**1,805.3**
Kentucky	18.1	98.9	112.0	123.5	142.0	123.3	131.2	162.2	16.2.2	284.4	292.9	321.1	390.6	**2,462.0**
Louisiana	83.5	187.0	216.1	215.5	254.3	240.7	272.1	282.8	282.8	263.0	288.6	299.3	260.4	**3,113.7**
Maine	71.7	112.4	119.2	121.1	147.4	139.0	141.0	141.0	141.0	199.7	202.0	201.0	190.9	**1,982.7**
Maryland	128.3	234.0	327.6	335.1	359.3	392.5	406.1	411.6	411.6	405.6	506.7	575.5	546.5	**5,031.7**
Massachusetts	293.1	466.2	491.2	508.7	557.8	675.6	676.6	670.2	670.2	662.8	707.2	877.2	820.3	**8,068.1**
Michigan	525.0	798.3	829.0	846.7	888.5	1,072.7	1,124.6	1,367.4	1,367.4	1,358.7	1,330.3	1,314.8	1,223.3	**14,059.2**
Minnesota	420.6	398.1	500.0	524.0	544.0	428.2	343.9	335.8	335.8	592.5	574.4	560.3	544.9	**6,338.6**
Mississippi	280.0	157.0	245.7	276.1	273.0	213.5	155.4	160.2	160.2	166.1	197.1	184.8	247.0	**2,691.8**
Missouri	106.1	105.0	104.0	487.2	251.7	229.8	242.4	244.3	244.3	235.0	250.4	262.8	231.5	**2,982.6**
Montana	13.5	32.4	36.5	37.5	41.1	41.2	68.9	83.7	83.7	107.9	118.9	117.1	108.4	**913.6**
Nebraska	46.5	47.8	77.7	75.4	84.7	94.0	105.0	104.9	104.9	102.8	113.3	113.8	101.2	**1,194.7**

Table 14.5 Continued

State	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total (1998–2010)
Nevada	55.7	87.3	94.3	98.2	101.0	97.4	160.5	167.9	167.9	166.6	172.5	160.1	143.4	**1,670.6**
New Hampshire	74.0	102.8	129.9	127.9	130.2	134.4	141.0	135.9	135.9	179.0	209.6	243.6	273.9	**2,063.0**
New Jersey	302.2	409.7	793.8	621.8	659.3	815.4	991.7	1027.7	1027.7	999.3	1025.7	1014.2	978.2	**10,653.4**
New Mexico	22.0	48.7	54.8	56.2	60.8	55.0	97.1	98.1	98.1	97.5	105.6	107.5	96.4	**995.0**
New York	656.9	1,226.6	1,421.2	1,775.8	1,965.3	1,744.3	1,764.3	1,749.5	1,749.5	1,709.4	1,792.9	2,244.5	2,061.8	**21,796.9**
North Carolina	44.3	149.6	166.6	180.1	205.5	176.1	186.4	188.0	188.0	376.5	388.8	395.2	391.0	**3,150.0**
North Dakota	22.4	37.9	42.2	42.0	44.4	39.2	41.1	41.5	41.5	43.4	57.3	59.7	52.8	**566.0**
Ohio	275.0	502.0	551.3	568.8	606.2	830.9	847.3	875.8	875.8	1,231.0	1,245.5	1,239.1	1,145.8	**11,234.9**
Oklahoma	65.2	112.1	121.0	124.1	128.8	116.9	121.4	170.9	170.9	264.4	310.1	333.6	310.7	**2,432.5**
Oregon	183.5	226.4	225.9	227.5	237.0	289.5	312.2	290.9	290.9	309.8	312.5	313.4	284.2	**3,512.5**
Pennsylvania	336.5	456.9	771.2	669.4	731.0	1,166.1	1,319.0	1,395.3	1,395.3	1,362.3	1,396.8	1,403.4	1,424.9	**13,801.9**
Rhode Island	61.8	93.5	99.9	102.1	127.9	134.5	156.1	175.5	175.5	161.0	165.3	179.3	182.2	**1,804.5**
South Carolina	31.3	81.9	94.4	96.3	106.9	93.1	99.4	101.7	101.7	98.0	110.0	116.6	102.4	**1,228.4**
South Dakota	19.9	35.6	38.7	39.8	41.6	40.6	48.2	48.6	48.6	65.2	84.8	89.9	81.8	**681.6**
Tennessee	80.8	78.7	334.7	224.6	244.4	246.7	263.6	267.7	267.7	275.3	417.3	463.4	422.1	**3,577.0**
Texas	926.9	1,543.1	1,360.6	1,455.0	1,502.0	1,195.0	966.4	990.7	990.7	1,518.1	1,987.2	1,687.6	1,691.3	**17,832.0**
Utah	42.6	67.1	71.4	67.9	77.9	75.1	81.6	82.7	82.7	82.9	97.4	95.5	90.4	**1,018.0**
Vermont	24.8	42.7	45.8	49.5	53.9	67.6	75.7	72.3	72.3	85.0	95.9	103.3	101.2	**887.9**
Virginia	15.7	109.9	133.0	139.3	156.7	13.8	144.6	241.9	241.9	295.2	298.9	315.2	280.0	**2,555.7**
Washington	258.5	347.0	371.6	361.4	448.8	455.3	453.4	459.3	459.3	542.2	592.9	579.6	545.5	**5,959.3**
West Virginia	34.2	74.3	83.4	86.0	94.0	94.3	153.6	154.5	154.5	159.9	180.9	190.0	175.1	**1,639.6**
Wisconsin	247.7	353.1	359.4	369.1	436.9	415.7	421.6	426.4	426.4	421.9	604.9	714.2	780.6	**5,973.9**
Wyoming	5.8	17.1	18.8	20.5	22.8	21.1	29.5	37.6	37.6	39.2	44.7	46.1	39.6	**379.8**
Total	**8,817.7**	**13,483.2**	**16,044.2**	**16,868.1**	**17,775.9**	**18,134.6**	**18,964.3**	**19,716.3**	**19,716.3**	**21,510.7**	**23,501.5**	**24,264.3**	**23,958.0**	**243,762.5**

Source: Centers for Disease Control and Prevention 2012a.

Note: Adjusted to fiscal year ending June 30. Revenues include state settlement revenues and net state cigarette tax collections. Revenues not reported include excise taxes collected on smokeless tobacco products, local excise taxes, and state or local sales taxes.

with additional components, such as surveillance and evaluation, as well as administration and management, to produce the synergistic effects of a comprehensive tobacco control program.

State and Community Interventions

The history of successful public health practice has demonstrated that the active and coordinated involvement of a wide range of societal and community resources is the foundation of sustained solutions to pervasive problems, like tobacco use (Green and Kreuter 2000; IOM 2002; NCI 2005; CDC 2007; USDHHS 2012). In an evidence-based review of population-based tobacco prevention and control efforts, the Task Force on Community Preventive Services confirmed the importance of coordinated and combined intervention efforts (Zaza et al. 2005). The strongest evidence, demonstrating the effectiveness of many of the population-based approaches that were most highly recommended by the Task Force, comes from studies in which specific strategies for smoking cessation, preventing tobacco use initiation, and eliminating exposure to secondhand smoke are combined with efforts to mobilize communities and integrate these strategies into synergistic and multicomponent efforts (Zaza et al. 2005). Additionally, research has shown the importance of community support, and involvement at the grassroots level, in implementing several of the most highly effective policy interventions, including increasing the unit price of tobacco products and creating smokefree environments (CDC 2007). This community-based intervention model to create a social and legal climate, which cultivates changes in social norms around tobacco use, has now become a core element of comprehensive statewide tobacco control programs (USDHHS 2000, 2012; Mueller et al. 2006; NCI 2006; CDC 2007). The CDC-recommended community-based model to produce durable changes in social norms is based on evidence that strategies with the greatest span will have the largest population impact (USDHHS 2000; Wisotzky et al. 2004; NCI 2005; Bonnie et al. 2007; CDC 2007). Recommendations from evidence-based reviews indicate that more individual focused educational and clinical approaches, with a smaller span of impact, should be combined with population-based efforts at the state and community levels (USDHHS 2000; NCI 2005; Bonnie et al. 2007; CDC 2007).

Statewide programs can provide the skills, resources, and information needed for the coordinated, strategic implementation of effective community programs. For example, educating local community coalitions about the legal and technical aspects of smokefree air ordinances and enforcement can be provided most efficiently through statewide partners, who have experience in providing these services (CDC 2007). Direct funding provided to statewide organizations can also be used to mobilize their organizational assets to strengthen community resources (CDC 2007). Each state's financial and social demographic characteristics have a significant role in their tobacco prevention and control efforts. Statewide efforts can include establishing a strategic plan for comprehensive tobacco control with appropriate partners at the state and local levels; implementing evidence-based policy interventions to decrease tobacco initiation, increase cessation, and protect people from exposure to secondhand smoke; collecting data; and developing and implementing culturally appropriate interventions (CDC 2007).

In addition to statewide programs, communities can also engage in strategies to address the way tobacco is promoted; the time, manner, and place in which it is sold; and how and where it is used, while also changing the knowledge, attitudes, and practices of tobacco users and nonusers (NCI 2005; CDC 2007). Effective community programs involve and influence people in their daily environment (Eriksen 2005; Minkler 2005; NCI 2005; CDC 2007). Therefore, community engagement and mobilization are essential to programs addressing tobacco control, and changing policies that can impact societal organizations, systems, and networks necessitates the involvement of community partners. For example, family and school-based programs when coordinated with community-wide efforts may be useful in the prevention of smoking initiation (USDHHS 2012). During the 1990s, three nationally funded programs—two by the federal government and one by a private foundation—and one federally funded research project helped communities mobilize to reduce tobacco use. The ASSIST, IMPACT, and SmokeLess States programs are examples of community-based interventions that have been successful in achieving tobacco control outcomes among adults and youth (USDHHS 2000, 2004, 2012).

Following the publication of the 2000 Surgeon General's report, Carson and colleagues (2011) published a Cochrane Review on community interventions in tobacco control. This review concluded that community interventions may be effective in preventing the initiation of smoking, and recommended five principles that should be implemented when conducting a community intervention, which are presented in Table 14.6. The 2012 Surgeon General's report also highlighted COMMIT as a community-wide intervention. The COMMIT intervention was a multiyear, randomized control trial, in 10-paired communities across the United States and 1-paired community in Ontario, to assess if community-wide comprehensive programs were effective in increasing, cessation among smokers (COMMIT Research Group, 1995a,b). The

Table 14.6 Five principles for community interventions

1. Use and build upon the knowledge of existing effective programs rather than repeating methods that have had limited success
2. Build flexible programs that can adapt to the variation between communities
3. Pre-test program with members of the target population prior to implementation of the full program
4. Use theoretical constructs to guide development of programs
5. Ensure intended audience is being reached by program

Source: Sowden et al. 2003.

COMMIT program was effective in increasing quit rates in intervention communities for light and moderate smokers, but not for heavy smokers (COMMIT Research Group, 1995a,b). COMMIT demonstrated no differences in smoking behavior, over time, for youth in the intervention communities compared to youth in the control communities; however, the intervention focus was primarily on adults (USDHHS 2012).

In addition to strategies associated with statewide and community-based policies and programs, essential components of a comprehensive tobacco control program also include disparity elimination initiatives and interventions specifically aimed at influencing youth (CDC 2007). Because some populations experience a disproportionate health and economic burden from tobacco use, a focus on eliminating such tobacco-related disparities is necessary. To ultimately eliminate tobacco-related disparities, equity in tobacco prevention and control must be achieved by removing avoidable structural and social barriers and equally implementing tobacco control programs and policies. State capacity and infrastructure, including clear leadership and dedicated resources, are essential to the development and implementation of a strong strategic plan that encompasses the identification and elimination of tobacco-related disparities (CDC 2007). Similarly, because most people who start smoking are younger than 18 years of age, intervening during adolescence is critical (USDHHS 2012). Community programs and interventions should be part of a comprehensive effort, coordinated, and implemented in conjunction with efforts to create tobacco-free social norms, including increasing the unit price of tobacco products, sustaining antitobacco media campaigns, and making environments smokefree (USDHHS 1994, 2012; Bonnie et al. 2007; CDC 2007).

The conceptual framework for state and community interventions, outlined in *Best Practices 2007,* has been used to develop the current generation of statewide comprehensive tobacco control programs (CDC 2007). However, it is important to note that most comprehensive programs currently in place have not been able to fully implement all recommended components. Policy and regulation components are especially hampered, because many state and local actions are limited by federal mandates and preemptions. Moreover, only two states, California and Massachusetts, have implemented comprehensive tobacco control programs for sufficient time to provide evaluation data on the overall efficacy of the emerging comprehensive model (CDC 2007; USDHHS 2012).

Health Communication Interventions

Mass-reach health communication interventions can be powerful tools for preventing the initiation of tobacco use, promoting and facilitating cessation, and shaping social norms related to tobacco use and exposure to secondhand smoke (CDC 2007). Typically, effective health communication interventions and countermarketing strategies employ a wide range of efforts: paid television, radio, out-of-home (e.g., billboard, transit), print, and digital advertising at the state and local levels; media advocacy through public relations/earned media efforts, such as press releases/conferences, social media, and local events; health promotion activities, such as working with health care professionals and other partners promoting quitlines, and funding permitting, offering free nicotine replacement therapy such as nicotine patches, gums, or lozenges; and efforts to reduce or replace tobacco industry sponsorship and promotion as well as to decrease movie smoking imagery (CDC 2007). Innovations in health communication interventions include the ability to target and engage specific audiences through multiple communication channels such as online video, mobile Web site, and smartphone and tablet applications. However, these platforms should be considered complements to, not substitutes for, traditional mass media (NCI 2008; USDHHS 2012). Evaluation of each digital media effort must be conducted to determine effectiveness and to help build an evidence base.

Effective messages that are targeted appropriately can stimulate public support for tobacco control interventions and create a supportive climate for policy and programmatic community efforts (USDHHS 2000). Young people are particularly vulnerable to social and environmental influences to use tobacco; messages and images that make tobacco use appealing to them are everywhere (USDHHS 2000; McAfee and Tynan 2012). For example, youth and young adults see smoking in their social circles, movies, video games, Web sites, and throughout the communities where they live. Nonsmoking adolescents exposed to tobacco advertising and promotional campaigns are significantly more likely to become young adult smokers (Lovato et al. 2003; Gilpin et al. 2007). Moreover, youth who are exposed to images of smoking in movies are more likely to smoke; those who get the most exposure to onscreen smoking are about twice as likely to begin smoking as those who get the least exposure (USDHHS 2012). Furthermore, evidence indicates adults are also influenced by tobacco promotion, particularly at the point of purchase (Clattenburg et al. 2012). Because youth and young adults continue to be heavily exposed to protobacco media—including images of smoking in movies, advertising, and promotion—public education campaigns are needed to prevent tobacco use initiation and to promote cessation (CDC 2007; USDHHS 2012).

In addition, because smoking in movies is such a major source of protobacco media exposure, if smoking in PG-13-rated movies was reduced to the fifth percentile of exposure, youth smoking rates could be reduced by 18% (Sargent et al. 2012). The magnitude of this effect would be similar to an increase in the price of cigarettes from about $6.00 per pack to over $7.50 average price. However, since onscreen smoking imagery continues in home media (e.g., broadcast, cable, satellite, and on-demand; on DVD and Blu-ray and on streaming media), there is a continuing need for public education campaigns to prevent tobacco use initiation.

Although the relative effectiveness of specific message concepts and strategies varies by target audience, research shows that countermarketing and other media approaches must have sufficient reach, frequency, and duration to be successful (Terry-McElrath et al. 2005; CDC 2006). Mass media campaigns have been a particularly successful component of prevention efforts in tobacco control for decades; able to reach large proportions of the population, mass media messages have the potential to influence not only individual behaviors but also social norms and institutional policies, which in turn can shape patterns of population-wide tobacco use (Hopkins et al. 2001; Hornick 2002). The first example of a successful campaign resulted from a legal challenge based on the Fairness Doctrine, which required countermarketing antitobacco ads to be aired to balance the protobacco advertising by the tobacco industry (USDHHS 2000). The Fairness Doctrine campaign of 1967–1970, which was the first sustained nationwide tobacco control media effort, documented that an intensive mass media campaign can produce significant declines in smoking rates among both adults and youth (Hamilton 1972).

As discussed above in the Tobacco Products Litigation section, one of the positive impacts of the MSA settlement between the states and the tobacco industry was the establishment of the Legacy Foundation. From this funding, Legacy implemented a national youth prevention media intervention—the truth® campaign, which employs an industry manipulation messaging strategy to help youth and young adults reject tobacco. Findings from numerous studies demonstrate that exposure to truth® campaign messages is associated with increases in antitobacco attitudes and beliefs, as well as a lower likelihood of initiating tobacco use (Farrelly 2002; Farrelly et al. 2005, 2009).

In 2008, Legacy, together with the National Alliance for Tobacco Cessation, launched EX, the first national adult cessation campaign since the Fairness Doctrine. This campaign was found to increase quit attempts, particularly among low-socioeconomic and minority smokers (Vallone et al. 2011a,b).

More recently, CDC aired "Tips from Former Smokers" (TIPS) during March–June 2012, the first federally funded, nationwide, paid-media tobacco education campaign in the United States (CDC 2012b; McAfee et al. 2013). The TIPS campaign featured former smokers talking about their experiences living with diseases caused by smoking, and included advertising on national and local cable television, local radio, online media, and billboards, and in movie theaters, transit venues, and print media. A subsequent evaluation of the campaign found that the number of weekly calls to the telephone quitline portal 1-800-QUIT-NOW from the 50 states, the District of Columbia, Guam, and Puerto Rico increased 132% (207,519 additional calls) during the TIPS campaign, and the number of unique visitors to the NCI smoking cessation Web site (NCI 2013) increased 428% (510,571 additional unique visitors) (CDC 2012b). Quit attempts among smokers increased from 31.1–34.8% (12% relative increase) (McAfee et al. 2013); 13.4% of these quit attempters reported not smoking at follow-up. Nationally, an estimated 1.6 million additional smokers made a quit attempt, and 220,000 remained abstinent at follow-up. Cessation recommendations made by nonsmokers increased from 2.6–5.1%, while talking with friends and family about dangers of smoking increased from 31.9–35.2%, resulting in

an estimated 4.5 million additional nonsmokers recommending cessation services to family members or friends and an additional 6 million talking about the dangers of smoking. As a result of the success of the first TIPS campaign, a second series of TIPS ads were released by CDC in March 2013.

The experience of tobacco control campaigns in many states, including Arizona, California, Florida, Massachusetts, Minnesota, and Oregon, as well as the national TIPS campaign, suggests that message content is very important (CDC 2007). Influential and successful campaigns contain a number of essential elements, including optimized themes, appropriate emotional tone, appealing format, clear messages, intensity, and adequate repetition (Pechmann 2001; Siegel 2002; Farrelly et al. 2003; Wakefield et al. 2003; Schar et al. 2006; Richardson et al. 2007; Angus et al. 2008; NCI 2008). Mass media campaigns lacking these elements have been shown to be less effective. In addition, messages that elicit strong emotional response, such as personal testimonials and viscerally negative content, produce stronger and more consistent effects on audience recall (Terry-McElrath et al. 2005).

Prior reports and reviews have shown that mass media campaigns are an effective tool to reduce the prevalence of tobacco and prevent initiation of tobacco use. The 1994 Surgeon General's report concluded that mass media campaigns are cost-effective. NCI Monograph 19 concluded mass media campaigns designed to discourage tobacco use can change youth attitudes about tobacco use, curb smoking initiation, and encourage adult cessation, and their effects are greater when mass media campaigns are combined with other prevention efforts, such as school and/or community-based programs (NCI 2008). In 2012, the U.S. Surgeon General's report included a systematic review of mass media campaigns and youth to update the NCI Monograph 19 review. The 2012 report noted that mass media campaigns are often a part of larger tobacco control programs; therefore, it is difficult to assess individual effects. Nevertheless, the report concluded that the evidence is sufficient to infer a causal relationship between adequately funded antismoking media campaigns and a reduced prevalence of smoking among youth, and that the evidence suggests a dose-response relationship between exposure to antismoking media messages and reduced smoking behavior among youth (USDHHS 2012).

Since the review conducted in the 2012 Surgeon General's report, there have been a few studies that examined the effects of mass media campaigns on tobacco use, cessation, behavior, attitudes, knowledge, intentions, or cessation. Summaries of these studies are shown in Table 14.7. Overall, these studies demonstrate that mass-reach health communications interventions are effective in reducing the prevalence of smoking (Davis et al. 2012; Emery et al. 2012); increasing cessation, quit attempts, or intentions to quit (Vallone et al. 2011; Davis et al. 2012; Emery et al. 2012); and increasing appropriate knowledge, beliefs, and attitudes regarding tobacco use (Murphy-Hoefer et al. 2010; Richardson et al. 2010). Further, Richardson and colleagues (2010) and Delva and colleagues (2009) provide evidence that mass media campaigns should be targeted toward specific populations (Delva et al. 2009; Richardson et al. 2010). However, it is difficult to assess the outcomes of mass media campaigns, because many do not reach CDC's recommended levels of funding, or they are components of other statewide or national programs.

Cessation Interventions

Quitting smoking is beneficial to health at any age, and cigarette smokers who quit before 35 years of age have mortality rates similar to those who never smoked (Doll et al. 2004; CDC 2011a). From 1965–2011, the prevalence of cigarette smoking among adults in the United States decreased from 42.4% to 19.0%, in part, because of an increase in the number who quit smoking (CDC 2011b). In 2011, 68.9% of adult smokers wanted to stop smoking, and 42.7% had made a quit attempt in the past year (see Table 13.8).

To increase tobacco use cessation, CDC's *Best Practices 2007* recommends that state action on tobacco use treatment should include both health care system-based interventions and population-based interventions, such as quitlines and reducing cost barriers for treatment. The report specifically recommends the following elements: (1) sustaining, expanding, and promoting the services available through population-based counseling and treatment programs, such as cessation quitlines; (2) covering treatment for tobacco use under both public and private insurance, including individual, group, and telephone counseling and all FDA-approved tobacco cessation medication; (3) eliminating cost and other barriers to treatment for underserved populations, particularly the uninsured and populations disproportionately affected by tobacco use; and (4) making the health care system changes recommended by the Public Health Service guidelines (Fiore et al. 2008), such as implementing a system of tobacco use screening and documentation and linking tobacco users to quitline services (CDC 2007). However, it is important to note that the cessation landscape has changed considerably since *Best Practices 2007,* with the enactment of Affordable Care Act, the implementation of the Meaning-

Table 14.7 Summary of studies examining effects of mass media campaigns on youth and adult smoking behavior, attitudes, knowledge, intentions, or cessation

Study	Design/population	Intervention description/ measures	Findings	Strengths, limitations, and comments
Davis et al. 2012	• New York Behavioral Risk Factor Surveillance system and National Health Interview Survey • Repeated cross-sectional surveys • 8,608 New York adult smokers • 2003–2009 • Data weighted to be representative of state	• New York Tobacco Control Program included mass media campaign focused on cessation • Used graphic images and focused on health consequences	• Significant increases in people reporting intentions to quit, seriously considering quitting, self-report exposure to advertisements, and people who made at least attempt to quit • Significant decreases in prevalence of current smoking and daily cigarette consumption • Decrease in prevalence of smoking steeper in New York compared to national data	Mass media campaign part of a larger program; difficult to assess individual effects; mass media campaign largest intervention within statewide program
Emery et al. 2012	• Combined with Nielsen data from Current Population Surveys Tobacco Use Supplement • Cross-sectional • 433,232 adults ≥18 years of age • 1999–2007	• Assessed relationship between U.S. adult smoking and exposure to state-sponsored antitobacco advertisements	• Increased exposure to antitobacco advertisements associated with less smoking, positively associated with intentions to quit, and made past year quit attempts • Increased exposure to tobacco advertising associated with increased smoking	Repeated cross-sectional data, cannot determine direct causal inference; difficult to assess if people saw advertisements; exposure of antitobacco messages was below CDC recommended levels
Richardson et al. 2010	• Multiple cross-sectional surveys from Legacy Media Tracking Surveys • 19,701 young adults 18–24 years of age • 2000–2004 • United States	• "Truth"—a nationally aired antitobacco media campaign, which focused on manipulation of tobacco industry	• Awareness of the campaign was associated with various attitudes and beliefs • No significant associations between awareness of campaign and intentions	Data were not very recent; included exposure to antitobacco sentiment as a covariate to account for young adults with pre-existing antismoking attitudes and beliefs
Delva et al. 2009	• Cross-sectional • 2,374 adults (51% had children) • Florida	• A mass media campaign, targeted at youth, was part of Florida's tobacco prevention program • Sought to determine if the youth-targeted campaign reached adults independent of having children	• More adults with children were aware of campaign compared to those without children • Awareness of tobacco industry manipulation was associated with all smokers' intentions to quit, independent of having children	Majority white non-Hispanic population; small sample size, when only smokers selected; mass media campaigns need to be targeted at specific audiences, but may have an effect on other populations

Table 14.7 Continued

Study	Design/population	Intervention description/ measures	Findings	Strengths, limitations, and comments
Murphy-Hoefer et al. 2010	• Quasi-experimental • 1,020 18–24 years of age (2 public 4-year arts and sciences colleges; 1 in a northern state and 1 in a southern state)	• Classes were randomly assigned 1 of 3 types of antitobacco messages (social norms, health consequences, and tobacco industry manipulation) • Pretest given and collected, then two 30-second messages from assigned group shown twice, posttest administered • Tested influence of the social norms, health consequences, and tobacco industry manipulation on knowledge, attitudes, and beliefs	• Health consequences antitobacco messages were only type of advertisement that increased college students' knowledge, attitudes, and beliefs	Not generalizable to other populations; scales need to be validated for this population; link to behavioral outcomes unknown
Vallone et al. 2011	• Longitudinal analyses • 4,067 adults 18–49 years of age • United States	• Baseline data collected prior to mass media campaign • The Ex Campaign: national mass media campaign to promote cessation in adults interested in quitting • Follow-up conducted 6 months after the launch	• Awareness of the campaign was significantly associated with increase in cessation-related cognitions index score among both Hispanics and smokers with less than a high school education • Increased awareness associated with quit attempts among Blacks • No significant associations in White, non-Hispanics	No control group; mass media campaign reach was at lower levels than CDC recommendations; mass media campaigns effectively reach minority and underserved populations

Note: **CDC** = Centers for Disease Control and Prevention.

ful Use initiative, the widespread adoption of EHRs, the creation of the Centers for Medicare and Medicaid Innovation, the introduction of new voluntary Joint Commission hospital performance measures, the increasing shift to managed care plans in state Medicaid programs, changes in the organization of private health care, and the emphasis on establishing linkages between public health interventions and clinical interventions. These changes have presented significant new opportunities to institutionalize tobacco use screening and intervention and to increase the availability of evidence-based cessation treatments within health care systems (Koh 2012).

Quitlines are telephone-based tobacco cessation services that help tobacco users quit. Services offered by quitlines include coaching and counseling, referrals, mailed materials, training to health care providers, web-based services, and in some instances, free medications such as nicotine replacement therapy (North American Quitline Consortium [NAQC] 2012). Services are usually provided by a contractor, which can be a public or private organization; the specific services provided typically vary by state and eligibility. There are multiple advantages to telephone counseling, when compared to other smoking cessation interventions (Zhu et al. 1996; Lichtenstein et al. 2010). First, quitlines are convenient; telephone counseling decreases logistical barriers to treatment and increases service utilization. Second, the semi-anonymous nature of phone counseling allows for candid discussion and faster progression of initial counseling sessions. Third, quitlines promote accountability and social support, while reducing the likelihood of attrition. Finally, quitlines allow for the use of a structured protocol, which can dictate minimum acceptable content per session. Moreover, a structured protocol ensures quality control: that every call is com-

prehensive, yet brief, thus increasing its utility for population-based application (Zhu et al. 1996; Lichtenstein et al. 2010).

The history and growth of quitlines have been summarized by Anderson and Zhu (2007) and Lichtenstein and colleagues (2010). In the early 1980s, NCI introduced the first telephone-based smoking cessation service as a component of the Cancer Information Service. The effectiveness of a reactive quitline that provided services through client-initiated calls was subsequently established, and the American Lung Association adopted the approach (Ossip-Kelin et al. 1991; Lichtentstein et al. 2010) for several years. In 1992, Group Health Cooperative of Puget Sound, a health maintenance organization, introduced the Free & Clear quitline service for its members, which utilized a proactive approach with counselor-initiated calls after clients first phoned the quitline. Concurrently, California established the first publicly funded statewide quitline using a similar proactive approach. Massachusetts (1994), Arizona (1996), and Oregon (1998) instituted proactive quitlines in the ensuing years, and by 2005, 44 U.S. states had sponsored some form of quitline (Lichtenstein et al. 2010). As of 2013, all 50 states and the District of Columbia had their own quitlines (NAQC N.D.). Callers to the national 1-800-QUIT-NOW portal are transferred to their state quitlines. The quitline network is supported by NCI, which manages the national portal, and by CDC, which provides supplemental funding to state quitlines as part of its support for comprehensive state tobacco control programs, as well as providing funding to the NAQC (CDC 2012b; NAQC N.D.). A critical factor in the rapid and widespread adoption of quitlines in the United States has been state public health programs, which saw the value of quitlines as an accessible and cost-effective clinical service, as well as an integral component of population-based approaches to smoking cessation (Anderson and Zhu 2007; Lichtenstein et al. 2010).

Quitlines have been shown to significantly increase rates of smoking cessation, when compared with minimal interventions, self-help, or no counseling; a meta-analysis of nine studies estimated the odds of quitting as 1.6 to 1 (95% CI, 1.4–1.8) (Fiore et al. 2008). However, state quitlines currently reach only 1–2% of smokers, largely because most state tobacco control programs lack sufficient funding to provide and promote quitline services to more callers (Anderson and Zhu 2007; Keller et al. 2010). CDC recommends that state quitlines reach 6–8% of the state's smokers (CDC 2007). In the United States, some consistently funded state quitlines have reached 4–5% of their smoking populations in 1 year (Woods and Haskins et al. 2007; Woods et al. 2007), and some large cities have reached 4% of their smokers in just 1 month by publicizing free nicotine patches available from the quitline (Cummings et al. 2006a,b).

In addition to quitlines, CDC's *Best Practices 2007* also recommends that statewide comprehensive tobacco control programs include health care system-based interventions (CDC 2007). The report specifically recommends that system-based initiatives ensure that all tobacco users, who are seen in the health care system, are screened for tobacco use. Additionally, all tobacco users should receive advice to quit and should be offered brief, or more intensive, counseling service and FDA-approved cessation medication (CDC 2007). Counseling and behavioral support for the treatment of tobacco use and dependence are described in more detail elsewhere in this chapter. In summary, the Public Health Service's evidence-based clinical practice guidelines on cessation state that brief advice by medical providers to quit smoking is an effective intervention (Fiore et al. 2008). More intensive interventions (e.g., individual, group, or telephone) that provide social support and coaching on problem-solving skills are even more effective. Combining counseling with FDA-approved medication for smoking cessation is most effective. The Public Health Service guideline also stresses that health care system changes are needed, such as covering treatment for tobacco use under both public and private insurance and eliminating cost and other barriers to treatment for underserved populations (Fiore et al. 2008). Model programs in large managed care plans show that full implementation of health care system changes, quitline services, comprehensive insurance coverage, and promotion of the services increases the use of proven treatments and decreases the prevalence of smoking (CDC 2007; Fiore et al. 2008).

International Tobacco Control

Increasingly, innovations in tobacco control programs and policies are occurring outside of the United States. Therefore, the history of international tobacco control is reviewed in this chapter since it provides a context for considering progress in the United States, and examples of what types of future efforts could be undertaken here. Previous Surgeon General's reports have reviewed the history of international tobacco control efforts. Although this chapter focuses primarily on the United States, this section briefly describes key global tobacco policy changes over the past half-century. Before the 1964 Surgeon General's report, significant scientific work was being conducted in other countries linking smoking with major health effects. In 1962, Royal College of Physicians (RCP) published the report, *Smoking and Health* (RCP 1962). In 1967, the first World Conference on Smoking and Health was held in New York City to convene international scientists and advocates to consider the findings of the 1962 RCP report and the 1964 Surgeon General's report. Since 1967, periodic (every 2–4 years) world conferences have been held to mobilize and coordinate international tobacco control efforts (see Table 14.8 for a listing of the years and locations of these conferences). Following a 1970 resolution at the World Health Assembly calling on governments to take action in the field of smoking control, WHO (1970) has had a commitment to antismoking action. WHO Expert Committees were convened in 1974 and 1979 to advise WHO in the field of smoking control. Beginning with the Third World Conference on Smoking and Health in 1975, WHO has cosponsored the world conferences and, increasingly, has taken a leadership role in activities. The WHO Technical Report, No. 636, *Controlling the Smoking Epidemic: Report of the WHO Expert Committee on Smoking Control* (WHO 1979), provided a comprehensive blueprint of the types of economic, policy, and regulatory interventions, which are very consistent with the established evidence-based best practices now defined in the WHO FCTC treaty and the MPOWER components: **M**onitor tobacco use and prevention policies; **P**rotect people from tobacco smoke; **O**ffer help to quit tobacco use; **W**arn about the dangers of tobacco; **E**nforce bans on tobacco advertising, promotion and sponsorship; and **R**aise taxes on tobacco. This is discussed in greater detail later in this chapter.

The activities at the World Conferences on Smoking and Health (and, since 1990, called the World Conference on Tobacco or Health) (Table 14.8) have been a forum to share and discuss scientific findings; however, since the early conferences, there has been a strong emphasis on mobilizing country efforts to promote social and legislative changes, engaging the leadership in health ministries and major voluntary health organizations into the tobacco control effort, and creating strong alliances among tobacco control leaders from across the world. Between the conferences, a network of tobacco control experts provided technical assistance to small regional groups or individual countries to maintain these same themes. This network was led by Nigel Gray of the Anti-Cancer Council of Victoria in Australia, who was head of the Union for International Cancer Control (UICC) Tobacco Program from 1974–1990, and included staff and volunteers from the American Cancer Society (ACS) and other UICC member organizations (e.g., Hong Kong Anti-Cancer Society), international leaders from other medical and professional groups (e.g., International Union Against Tuberculosis and Lung Disease, World Lung Foundation), and groups such as the United Kingdom's Action on Smoking and Health and Norway's National Council on Smoking and Health. Advocacy organizations in the United States, such as Doctors Ought to Care and ANR, drew upon the experience of similar groups such as the United Kingdom's Action on Smoking and Health, the Australian Council on Smoking and Health, and the Australian BUGA UP, in adopting stronger anti-industry campaigns and strategies (Chapman 1996, 2007).

By the 1990s, the tobacco epidemic was recognized as a rapidly growing international cause of premature death. In 1993, Ruth Roemer, lawyer and public health researcher, began to raise support for an international legal approach to address the global tobacco epidemic (Roemer et al. 2005; WHO 2009a). The process of creating an international instrument for tobacco control was formally initiated in May 1995 at the 48th World Health Assembly (WHO 1995), but the enterprise was not formally launched until 1999. In 1998, the newly elected WHO Director-General, Gro Harlem Brundtland, established the Tobacco Free Initiative as a special cabinet project and championed the concept of a framework convention on tobacco control (WHO 2009a).

The history of WHO FCTC has been documented (WHO 2009a). FCTC was the first international health treaty negotiated under the WHO treaty-making constitutional authority. In May 2000, the 53rd World Health Assembly accepted the provisional text, which had been prepared by an intergovernmental technical working group, and called for the treaty negotiations to begin

Table 14.8 Years and locations for the World Conferences on Smoking and Health

Year	Number	Conference	Location
1967	1	World Conference on Smoking & Health	New York City
1971	2	World Conference on Smoking & Health	London
1975	3	World Conference on Smoking & Health	New York City
1979	4	World Conference on Smoking & Health	Stockholm
1983	5	World Conference on Smoking & Health	Winnipeg
1987	6	World Conference on Smoking & Health	Tokyo
1990	7	World Conference on Tobacco or Health	Perth
1992	8	World Conference on Tobacco or Health	Buenos Aires
1994	9	World Conference on Tobacco or Health	Paris
1997	10	World Conference on Tobacco or Health	Beijing
2000	11	World Conference on Tobacco or Health	Chicago
2003	12	World Conference on Tobacco or Health	Helsinki
2006	13	World Conference on Tobacco or Health	Washington, D.C.
2009	14	World Conference on Tobacco or Health	Mumbai
2012	15	World Conference on Tobacco or Health	Singapore
2015	16	World Conference on Tobacco or Health	Abu Dhabi

(WHO 2000). Following six Intergovernmental Negotiating Body sessions between October 2000 and March 2003, the treaty was adopted by the 56th World Health Assembly in May 2003 (WHO 2003). It became one of the most rapidly and widely embraced treaties in the United Nations (UN) history. By June 29, 2004, 168 UN member states had signed the WHO FCTC expressing their willingness to become a Party to the Convention. Ninety days after the 40th state had acceded to, ratified, accepted, or approved the FCTC, the treaty entered into force on February 27, 2005. Together with UN Member States and regional economic integration organizations, there are now 176 Parties to the Convention. The United States signed the Convention on October 5, 2004, but the treaty has not been ratified by the U.S. Senate.

The articles of FCTC provide a scientific basis for coordinating world tobacco control efforts. Based on these FCTC treaty articles, and the scientific evidence on effective strategies to control the tobacco epidemic, WHO developed the six component MPOWER format to evaluate the implementation of tobacco control in all countries (WHO 2008b).

- **M**onitor tobacco use and prevention policies. Articles 20 and 21 of FCTC
- **P**rotect people from tobacco smoke. Article 8 of FCTC
- **O**ffer help to quit tobacco use. Article 14 of FCTC
- **W**arn about the dangers of tobacco. Articles 11 and 12 of FCTC
- **E**nforce bans on tobacco advertising, promotion and sponsorship. Article 13 of FCTC
- **R**aise taxes on tobacco. Articles 6 and 15 of FCTC

Using specific indicators based on each of these MPOWER components, global progress in tobacco control has been monitored (see the text box "MPOWER Success: Turkey" for one example). The key findings of the status of tobacco control in 2008 are shown in Table 14.9.

In 2009, an update report was released focusing on the implementation of smokefree environments (WHO 2009b). In 2011, the third global report provided data on the level of countries' achievement of the six MPOWER measures, updated through 2010, and additional data collected on warning the public about the dangers of tobacco

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MPOWER Success: Turkey

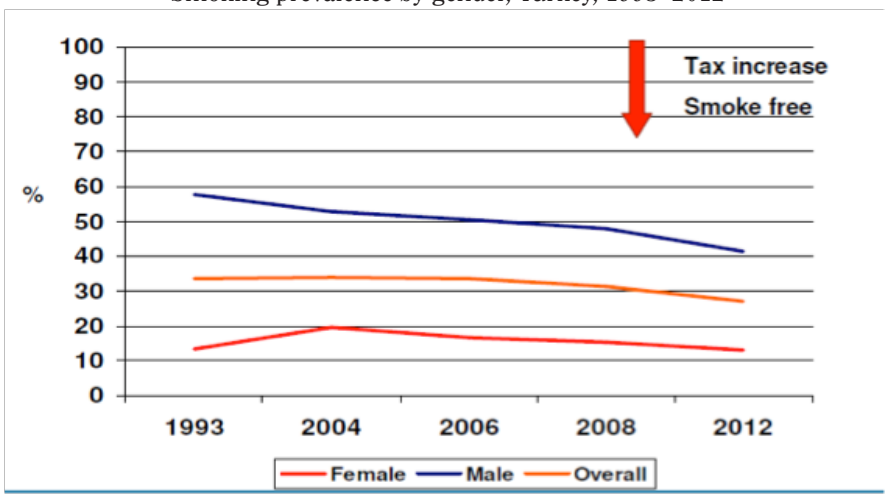
Turkey was the first country to implement all MPOWER measures within 6 years. Turkey's MPOWER successes included:

- **M**onitor: Surveillance and monitoring through Global Adult Tobacco Surveys and Global Youth Tobacco Surveys
- **P**rotect: 100% smokefree laws with regulations to ensure compliance
- **O**ffer Help: National quitline and free cessation services (including nicotine replacement therapy)
- **W**arn: Mass media campaigns and graphic health warnings that cover 65% of tobacco packaging
- **E**nforce: Total ban on tobacco advertising, promotion and sponsorship
- **R**aise taxes: Increase in tobacco taxes (80.3% of retail price)

The results of implementing all MPOWER measures in Turkey:

- A 13.7% decline in smoking prevalence after comprehensive tobacco control measures were put into place (2008–2012)

Smoking prevalence by gender, Turkey, 1993–2012



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(WHO 2011). The report examines in detail the two primary strategies to provide health warnings—labels on tobacco product packaging and antitobacco mass media campaigns. It provides a comprehensive overview of the evidence base for warning people about the harms of tobacco use as well as country-specific information on the status of these measures. The fourth and most recent global report, released in 2013, examines the enforcement of bans on tobacco advertising, promotion, and sponsorship, in addition to providing data updates on MPOWER achievements through 2012, at the country level (WHO 2013b). The updated status report on global tobacco control on key indicators is shown in Figure 14.8.

As tobacco control gained greater priority under WHO Director-General Dr. Gro Harlem Brundtland, several international collaborations were expanded. In 1998, CDC and WHO created the Global Youth Tobacco Survey to address the need for surveillance of tobacco use among adolescents across the world (Warren et al. 2006, 2008). Additional surveillance surveys have been added, includ-

Table 14.9 Global tobacco control MPOWER key findings, 2008

Monitor tobacco use and prevention policies
- Good monitoring tracks the extent and evolution of the epidemic and indicates how best to tailor policies.
- Currently, half of countries – two in three in the developing world – do not have even minimal information about tobacco use.

Protect people from tobacco smoke
- Every person has a right to breathe air free of tobacco smoke. In addition to protecting the health of non-smokers, smoke-free environments encourage smokers to quit.
- Evidence from pioneering countries shows that smoke-free laws do not harm businesses and are popular with the public.
- Permitting smoking in designated areas undermines the benefit of smoke-free environments.
- Only 5% of the global population is protected by comprehensive national smoke-free legislation.

Offer help to quit tobacco use
- Among smokers who are aware of the dangers of tobacco, three out of four want to quit. Counseling and medication can double the chance that a smoker who tries to quit will succeed.
- National comprehensive services supporting cessation are available only in 9 countries, representing 5% of the world population.

Warn about the dangers of tobacco use
- Relatively few tobacco users fully grasp the health dangers. Hard-hitting anti-tobacco ads and graphic pack warnings reduce the number of children who begin smoking and increase the number of smokers who quit.
- Pictures are more powerful deterrents than words on tobacco packaging warnings, but only 15 countries, representing 6% of the world's population, mandate pictorial warnings.
- Just five countries, with 4% of the world's population, meet the highest standards for pack warnings.

Enforce bans on tobacco advertising, promotion and sponsorship
- Widespread advertising falsely associates tobacco with desirable qualities.
- Studies have found that advertising bans can lower tobacco consumption.
- Only 5% of the world's population currently lives in countries with comprehensive national bans on tobacco advertising, promotion and sponsorship.
- About half the children of the world live in countries that do not ban free distribution of tobacco products.

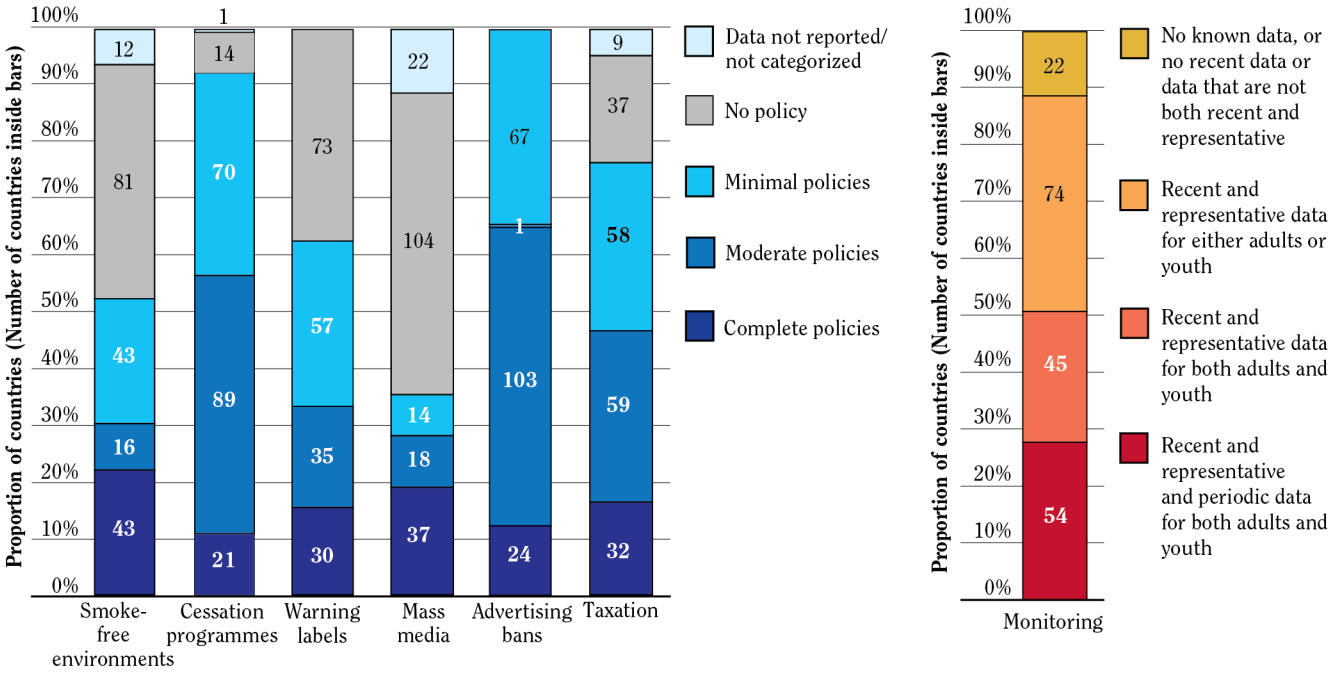
Raise taxes on tobacco
- Tobacco taxes are the most effective way to reduce tobacco use, especially among young people and the poor.
- Increasing tobacco taxes by 10% generally decreases tobacco consumption by 4% in high-income countries and by about 8% in low- and middle-income countries.
- Tobacco tax increases also increase government revenues.
- Only four countries, representing 2% of the world's population have tax rates greater than 75% of the retail price.
- In countries with available information, tobacco tax revenues are more than 500 times higher than spending on tobacco control. In low- and middle-income countries, tobacco tax revenues are more than 9000 and 4000 times higher than spending on tobacco control, respectively.

Source: World Health Organization (WHO) 2008b.
Note: A follow-up report was released in 2009 focusing on the implementation of smoke-free environments (WHO 2009b).

ing the Global School Personnel Survey, the Global Health Professions Student Survey, and the Global Adult Tobacco Survey (GATS) (Warren et al. 2009). Tobacco Questions for Surveys: a subset of key questions from GATS was introduced to promote standard use of tobacco questions in surveys. Results from the GATS component were recently published showing the tobacco use rates in 14 low- and middle-income countries (LMICs) compared with data from the United Kingdom and United States (Giovino et al 2012).

Leading up to the FCTC negotiations, the Framework Convention Alliance (FCA) was created in 1999 (WHO 2013). FCA was formally established in 2003, and now includes over 350 organizations from more than 100 countries. FCA has a mission to work on the development, ratifications, and implementation of the FCTC. FCA produces policy papers supporting the implementation of FCTC articles (e.g., on price and tax; product regulation; packaging and labeling; education and training; advertising, promotion, and sponsorship; cessation, illicit

Figure 14.8 World Health Organization (WHO) selected key indicators for tobacco control policies, 2012



Source: WHO 2013.

trade, alternative livelihoods, and environments; liability; reporting on treaty implementation; and technical and financial assistance). FCA also organizes public events, workshops, and media campaigns to support the development, ratification, and implementation of the FCTC treaty and related tobacco control activities.

The Global Smokefree Partnership ([GSP] 2013) was formed to promote the implementation of smokefree air policies worldwide. The GSP currently is hosted by the International Union against Tuberculosis and Lung Diseases and FCA. GSP works together with the civil society and nongovernmental organizations within countries to gain the support of universities, intergovernmental organizations, ministries of health, corporations, and civic and medical leaders to support smokefree air policies and legislation. The pace at which comprehensive smokefree policies—such as policies that ban smoking in all enclosed public places and workplaces (no designated smoking rooms allowed), including bars, restaurants, and public transportation—have spread across the world has been cited as one of the most visible products of policy changes following a country's joining FCTC (Hyland et al. 2012). Ireland passed comprehensive smokefree legislation even before ratifying FCTC. Similarly, shortly after signing FCTC, both New Zealand and Norway implemented comprehensive smokefree policies. As of 2012, 28 countries had national comprehensive smokefree laws, which required 100% coverage of bars, restaurants, and nonhospitality workplaces (Table 14.10) and an additional 27 countries had national smokefree laws, which were not as fully comprehensive (Hyland et al. 2012).

Funding for global tobacco control has dramatically increased in recent years, primarily due to foundation support. In 2007, the Bloomberg Initiative to Reduce Tobacco Use was started to address the lack of global resources to implement FCTC (Bloomberg Philanthropies 2013). In 2009, the Bloomberg Philanthropies joined forces with The Bill & Melinda Gates Foundation to broaden the global tobacco control movement, particularly in China, India, Southeast Asia, and Africa, with a commitment of $125 million. The initial Bloomberg Initiative to Reduce Tobacco Use commitment of $600 million was increased by an additional $220 million in 2012 (Bloomberg Philanthropies 2012). The Initiative continues to fund five institutions with global reach in tobacco control advocacy and public health: Campaign for Tobacco-Free Kids, National Foundation for the Centers for Disease Control and Prevention, the Johns Hopkins Bloomberg School of

Public Health, WHO, and the World Lung Foundation/International Union Against Tuberculosis and Lung Disease. GATS, described above, is one major component of the Initiative (Giovino et al. 2012). A short list of the accomplishments, as of 2013, among LMICs that the Bloomberg Initiative (2013) has supported since 2007 are shown below:

- 32 countries successfully supported to implement national smokefree legislation, providing protection from exposure to second-hand smoke to over 1.3 billion people.
- 24 countries successfully supported to implement legislative bans on tobacco advertising, protecting nearly 1 billion people from tobacco advertising.
- 31 countries successfully supported to implement pictorial health warnings to warn about the dangers of tobacco use to over 2.7 billion people.
- 12 countries successfully supported increased tobacco taxes.
- In total, 46 countries representing over 4.5 billion people, have made critical legislative improvements supported by the grants program (Bloomberg Philantrophies 2013).

The majority of the accomplishments in tobacco control reviewed in this chapter have focused on the United States. However, as the brief summary above shows, the tobacco control activities occurring within the United States, since 1964, have happened within a dramatic global context. Following the first World Conference on Smoking and Health in 1967, there has been an active flow of tobacco control efforts between the United States and its global partners. For example, as an ACS volunteer, Dr. Joseph W. Cullen was an active member of the UICC Tobacco Program technical assistance teams before joining NCI in 1982, where he established NCI's Smoking Tobacco and Cancer Program (Greenwald and Cullen 1984). As described above, STCP was a major funder of tobacco control research and programs in the 1980s, including the ASSIST program that was the foundation of comprehensive statewide tobacco control efforts (Cullen 1989; USDHHS 2000). Several of the international tobacco control innovations, particularly those related to media and public health advocacy, were integrated into ASSIST intervention activities (NCI 2005). Another member of the UICC Tobacco Program technical assistance teams, Michael Pertschuk, was an important advisor to ASSIST and other U.S. tobacco control program efforts on media advocacy strategies, including ACS's S*moke Signals: The Smoking Control Media Handbook* (ACS 1987). In addition to these several examples, there have been many international links and contributions across many of the tobacco control activities reviewed in this chapter.

International Trade and Tobacco Control

Tobacco and tobacco products are widely traded international goods and subject to the agreements that govern international trade (see Chapter 2) (Bettcher et al. 2001; WHO 2012a). Increasingly, international trade agreements have become relevant to tobacco control in the United States (Jarman et al. 2012). The intersection between international trade and tobacco control dates to the 1970s and the expansion of free trade areas through global, regional, and bilateral trade agreements (Bettcher et al. 2001; WHO 2012a). This history was reviewed in previous Surgeon General's reports, particularly in the 2000 report (see Chapter 6, USDHHS 2000). As reviewed in that report, various U.S. policies and programs have been used to help domestic tobacco growers and cigarette companies expand into foreign markets, particularly starting with trade cases initiated under Section 301 of the *Trade Act of 1974*. Four Section 301 cases in the late 1980s dealt with cigarettes: against Japan (1985), Taiwan (1986), South Korea (1988), and Thailand (1989). Threats of retaliatory sanctions under Section 301 led to agreements with each country, which permitted U.S. cigarette firms access to their markets. In the 1990s, multinational trade agreements became the basis for opening foreign markets to U.S. tobacco products. The Uruguay Round of negotiations under the General Agreement on Tariffs and Trade, concluded in 1994, established the World Trade Organization (WTO) and initiated an overhaul of the international trade regime. The agreement included, for the first time, the liberalization of trade in unmanufactured tobacco and facilitated the expansion of trade in tobacco products through significant reductions in tariff and non-tariff barriers to trade. Regional trade agreements and free trade areas, such as the North American Free Trade Agreement, the European Union, and the Association of South-East Asian Nations acted in synergy with events at the global level by further mandating trade liberalization in goods and services.

Early on, it was recognized that trade liberalization may stimulate demand for tobacco products, especially in traditionally closed tobacco markets in LMICs (Chaloupka et al. 1998; Taylor et al. 2000; Bettcher et al. 2001).

Table 14.10 Global tobacco control MPOWER key findings, countries 100% smokefree, 2009

Country[a]	Local law approval[b]	Additional coverage
Australia	• First State 2006 (Tasmania) • Last State 2010 (Northern Territory)	In some states, vehicles with children
Bermuda	2006	
Bhutan	2005	
British Virgin Islands	2006	
Canada	• First Territories 2004 (Northwest and Nunavut) • Last Territory 2009 (Prince Edward Island)	In some territories, vehicles with children. Outdoor seating and patios are smokefree as well
Cyprus	2010	Vehicles with children
England	2006	
France	2007	
Guatemala	2008	
Honduras	2010	
Hong Kong	2006	Public transport interchanges
Iceland	2007	
Iran	2007	All roofed areas
Ireland	2004	
Lithuania	2007	
Maldives	2009	
New Zealand	2003	Prisons
Northern Ireland	2007	
Norway	2004	
Panama	2008	
Paraguay	2010	
Peru	2006	
Scotland	2006	
Singapore	2009	All roofed areas
Spain	2011	
Turkey	2008	
Uruguay	2006	
Wales	2006	

Source: Hyland et al. 2012. Reprinted with permission from BMJ Publishing Group, Ltd., © 2012.
[a]Countries were considered 100% smokefree if the national law banned smoking in nonhospitality workplaces, restaurants, and bars (no designated smoking rooms allowed), according to the American Nonsmoker's Rights Foundation. 3 countries with all subnational entities having this type of policies were also considered 100% smokefree, such as Canada and Australia.
[b]Law implementation and not law enforcement is described. Definitions and specifications of indoor workplaces might vary according to local law.

Where trade agreements require parties to lower tariffs on tobacco or tobacco products, savings may be passed on to consumers, reducing the retail cost of tobacco products and stimulating demand. Liberalization may also facilitate greater competition in the tobacco sector, which can place downward pressure on prices, stimulate advertising of tobacco products, and lead to brand and product innovation designed to attract new consumers. Fortunately, following the lead of Thailand in its initial challenge, the political awareness around the region was increased and has remained strong on this issue (Mackay et al. 2013).

Since the late 1990s, a number of economic studies have been carried out to empirically examine the relationship between cigarette consumption and trade liberalization (Chaloupka et al. 1998; Taylor et al. 2000; Bettcher et al. 2001; WHO 2012a). These studies largely support the conclusion that past free trade agreements have increased tobacco consumption in LMICs. However, liberalization has not been found to increase the cigarette market in high-income countries, such as in the United States (Taylor et al. 2000). Moreover, it has been suggested that implementation of evidence-based tobacco control policies can reduce the impact of trade liberalization on consumption (WHO 2012a).

As more markets have been opened to transnational tobacco companies, the most significant risk posed by international trade agreements to tobacco control has shifted to rules governing so-called nontariff barriers to trade, (such as regulatory measures) which may restrict the regulatory autonomy of domestic authorities (WHO 2012a). International trade and investment litigation has increasingly become part of a global strategy by the tobacco industry to undermine tobacco control measures, including commitments contained in the FCTC (WHO 2012a). These disputes are occurring through WTO, regional and bilateral trade dispute settlement mechanisms, and international investment arbitration (Jarman et al. 2012; Gleeson and Friel 2013). Unlike past experiences with trade liberalization, the implications of these recent legal disputes directly concern domestic tobacco control efforts in high-income countries, including the United States (Jarman et al. 2012; WHO 2012a).

The Role of FCTC in Trade and Investment

Notably, the word trade never appears in the final FCTC (Mamudu et al. 2011). Throughout the negotiations, an alliance of LMICs and nongovernmental organizations fought to secure specific language prioritizing public health and tobacco control over trade agreements. Although the final text does not include any specific reference to health over trade, the first line of the Convention's preamble states, "The Parties to this Convention, determined to give priority to their right to protect public health." The general objective of FCTC, and this wording in particular, could be interpreted as intending to allow strong domestic tobacco control measures, even if there are adverse consequences that affect trade and may make international trade and investment agreements more sensitive to tobacco control (WHO 2012a). In addition, Article 5.3 of the Convention and its implementation guidelines provide that Parties should not grant the tobacco industry incentives for investment and should restrict their dealings with the industry. This could be interpreted as barring countries from taking tobacco industry-related claims to international trade bodies, including WTO. FCTC also sets out rules governing conflicts between itself and other treaties, including trade and investment agreements. The Punta del Este Declaration on Implementation of FCTC reinforces the flexibility that Parties have in implementing tobacco control measures (Lieberman 2012). In addition to FCTC, Resolution WHA 59.26 on international trade and health highlighted the need for WHO Member States to seek coherence in their trade and health policies. Also, the Doha Declaration on the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement and Public Health has helped clarify the flexibilities that permit WTO Members to protect health under TRIPS (Lieberman 2012).

Tobacco-Related Trade Disputes in WTO

There are 141 countries that are Members of WTO and also Parties to FCTC and are, therefore, bound to both sets of commitments. Since FCTC came into force in 2005, seven tobacco control policies adopted by FCTC Parties and one FCTC-consistent tobacco control policy adopted by a non-Party (United States) have been the subject of discussions within WTO committees. Four of these policies have been subject to formal WTO dispute settlement proceedings. Although some of these cases do not have wide-ranging implications for tobacco control, some may prove to be significant, including the *U.S. Clove Cigarettes* case, in which the Appellate Body of WTO held that parts of the *Tobacco Control Act* are inconsistent with WTO obligations (Jarman et al. 2012). In this case, Indonesia requested a WTO dispute resolution panel in June 2010 based on the U.S. ban on characterizing flavors (other than tobacco or menthol) in cigarettes included in the *Tobacco Control Act*. Indonesia argued to the panel that the law was discriminatory because imported clove

cigarettes were banned, although domestic menthol cigarettes are allowed to remain in the market. Alternatively, the United States argued that excluding menthol from the cigarette flavor ban was justified under WTO obligations because banning menthol cigarettes (which are regularly smoked by tens of millions of adults) presented different public health issues and potential consequences compared to banning other flavored cigarettes (which were used regularly by very few adults). The WTO found that the distinctions on what flavors were banned in the United States were based upon health considerations; however, the WTO appellate body was not persuaded that there was a legitimate regulatory reason to ban clove cigarettes but not menthol cigarettes and held that the ban on clove cigarettes was inconsistent with the WTO obligation to treat imported products no less favorably than similar domestic products. On July 23, 2013, the United States announced that it had come into compliance with the WTO rulings. However, on August 23, 2013, Indonesia requested a special WTO Dispute Settlement Body meeting to request WTO authorization to impose countermeasures based on Indonesia's allegation that the United States has not come into compliance. The United States objected to Indonesia's request, referring the matter to arbitration.

Australia–Plain Packaging disputes are also significant WTO dispute settlement cases currently under way. In those disputes, a number of WTO Members are challenging Australia's right to implement plain packaging of tobacco products (Gleeson and Friel 2013). Various claims have been made, including that the measure unlawfully interferes with trademark rights and is more trade restrictive than necessary to protect human health. Those cases raise the question of how much authority any government has over the content and look of tobacco product packaging. A number of additional countries, which are considering plain packaging polices, are closely watching the outcome of the case, although New Zealand has announced that it will move forward with plans to introduce unbranded, standardized packaging with large health warnings for all tobacco products.

Bilateral Trade and Investment Agreements

In addition to these high-profile WTO disputes, tobacco companies have also brought recent claims directly against countries under other international financial agreements. Regional and bilateral trade and investment agreements, which have become increasingly common in the past decade, have provided another avenue through which tobacco control laws may be challenged.

For example, such agreements often include investor-state settlement provisions that grant investors the right to initiate dispute settlement proceedings against foreign governments in their own right under international law. Similar provisions are currently being used by a tobacco company to challenge tobacco control policies in Australia and Uruguay.

Confronting the Tobacco Epidemic in a New Era of Trade and Investment Liberalization reviews the ways in which the tobacco industry exploits international trade and investment agreements (WHO 2012a). This report provides an overview of the challenges posed by the ways that countries have been coordinating their trade, investment, and health policies. The specialized areas of law point to the need for greater capacity within tobacco control to address these challenges.

Summary

The past 50 years has witnessed a dramatic shift in attitudes among Americans toward tobacco products and the use of tobacco. This shift, from tobacco products being a widely accepted element of daily life to an addiction viewed unfavorably, has been driven by public health interventions and policies that discourage tobacco use and by the steps taken to regulate tobacco products and protect the population. We now have multiple examples of successful interventions, policies, and regulatory approaches, and these should guide future efforts to reduce tobacco use among youth and adults. Although there has been significant progress, much remains to be done in applying what is known to control tobacco use and in adapting these approaches to the new challenges for tobacco control as the industry diversifies its product lines.

This chapter expands and updates prior reviews in this series of reports on intervention approaches to reduce tobacco use in the population. As documented in previous reviews of a diverse and substantial body of research and evaluation literature, the evidence base documents the efficacy and effectiveness of a suite of tobacco control interventions and policy measures. These approaches, along with the regulatory authority of FDA, will be the foundation for designing strategies for further speeding the decline of tobacco use in the United States.

Conclusions

1. The evidence is sufficient to conclude that there are diverse tobacco control measures of proven efficacy at the population and individual levels.

2. The evidence is sufficient to conclude that advertising and promotional activities by the tobacco companies cause the onset and continuation of smoking among adolescents and young adults.

3. Tobacco product regulation has the potential to contribute to public health through reductions in tobacco product addictiveness and harmfulness, and by preventing false or misleading claims by the tobacco industry of reduced risk.

4. The evidence is sufficient to conclude that litigation against tobacco companies has reduced tobacco use in the United States by leading to increased product prices, restrictions on marketing methods, and making available industry documents for scientific analysis and strategic awareness.

5. The evidence is sufficient to conclude that increases in the prices of tobacco products, including those resulting from excise tax increases, prevent initiation of tobacco use, promote cessation, and reduce the prevalence and intensity of tobacco use among youth and adults.

6. The evidence is sufficient to conclude that smokefree indoor air policies are effective in reducing exposure to secondhand smoke and lead to less smoking among covered individuals.

7. The evidence is sufficient to conclude that mass media campaigns, comprehensive community programs, and comprehensive statewide tobacco control programs prevent initiation of tobacco use and reduce the prevalence of tobacco use among youth and adults.

8. The evidence is sufficient to conclude that tobacco cessation treatments are effective across a wide population of smokers, including those with significant mental and physical comorbidity.

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Appended Table 14.2 State cigarette excise taxes (dollars per pack) and sales tax rate applied to cigarettes

State	Excise tax March 31, 2013 (in dollars)	Sales tax rate November 1, 2012 (%)
Alabama	0.425	4
Alaska	2.00	0
Arizona	2.00	6.6
Arkansas	1.15	6
California	0.87	7.25[a,b]
Colorado	0.84	2.9
Connecticut	3.40	6.35
Delaware	1.60	0
District of Columbia	2.50	6[c]
Florida	1.339	6
Georgia	0.37	4[d]
Hawaii	3.20	4
Idaho	0.57	6
Illinois	1.98	6.25
Indiana	0.995	7
Iowa	1.36	6
Kansas	0.79	6.3[d]
Kentucky	0.60	6
Louisiana	0.36	4[d]
Maine	2.00	5
Maryland	2.00	6
Massachusetts	2.51	6.25
Michigan	2.00	6
Minnesota[e]	1.23	6.875[d]
Mississippi	0.68	7
Missouri	0.17	4.225[d]
Montana	1.70	0
Nebraska	0.64	5.5[d]
Nevada	0.80	6.85[a,b]
New Hampshire	1.68	0
New Jersey	2.70	7
New Mexico	1.66	5.125
New York	4.35	4[d]
North Carolina	0.45	4.75[d]
North Dakota	0.44	5
Ohio	1.250	5.5
Oklahoma	1.03	4.5[d]
Oregon	1.18	0
Pennsylvania	1.60	6
Rhode Island	3.50	7

Appended Table 14.2 Continued

State	Excise tax March 31, 2013 (in dollars)	Sales tax rate November 1, 2012 (%)
South Carolina	0.57	6
South Dakota	1.53	4
Tennessee	0.62	7
Texas	1.41	6.25[d]
Utah	1.70	4.65[b,d]
Vermont	2.62	6
Virginia	0.30	5
Washington	3.025	6.5
West Virginia	0.55	6
Wisconsin	2.52	5[b]
Wyoming	0.60	4[b]
Mean	1.478	5.05
Median	1.339	6

Source: Sales tax data from Orzechowski and Walker 2012. Excise tax data from Centers for Disease Control and Prevention, Office on Smoking and Health, State Tobacco Activities Tracking and Evaluation System, unpublished data.

Note: The states of Alaska, Delaware, Montana, New Hampshire, and Oregon do not have a state general sales tax. [a]Includes that portion of state-collected local sales tax rates where local rates are uniform and statewide. [b]Additional local taxes that are not uniform are collected by the state and are not included here.

[c]The District of Columbia exempted cigarettes from the sales and use tax in October of 2011 and replaced it with a surtax of 36¢ per 20 pack. The tax listed in the table is the cigarette excise tax of $2.50 plus the cigarette surtax of 36¢.

[d]Certain cities and/or counties impose general sales and/or excise taxes that are collected by the state (not included here).

[e]Minnesota sells stamps for $1.586 per pack. It is a composite of the 48¢ per pack excise tax, a 75¢ per pack health impact fee, and a 35.6¢ per pack wholesale sales tax assessed in lieu of a general sales tax.

Appended Data Table for Figure 14.6

State	City or county	100% workplaces	100% restaurants	100% bars
Alaska	Anchorage	Yes	Yes	Yes
Alaska	Barrow	—	Yes	—
Alaska	Dillingham	—	Yes	—
Alaska	Fairbanks	Yes	—	—
Alaska	Haines Borough	Yes	Yes	Yes
Alaska	Juneau	—	Yes	Yes
Alaska	Klawock	Yes	Yes	Yes
Alaska	Koyuk	Yes	Yes	—
Alaska	Nome	Yes	Yes	Yes
Alaska	Palmer	Yes	Yes	Yes
Alaska	Petersburg	—	Yes	Yes
Alaska	Sitka	Yes	Yes	—
Alaska	Skagway Borough	Yes	Yes	Yes
Alaska	Unalaska	—	Yes	Yes
Alabama	Albertville	Yes	Yes	Yes
Alabama	Alexander City	Yes	Yes	—
Alabama	Atmore	Yes	Yes	Yes
Alabama	Auburn	—	Yes	Yes
Alabama	Bay Minette	—	Yes	—
Alabama	Bayou La Batre	Yes	Yes	Yes
Alabama	Bessemer	Yes	Yes	—
Alabama	Birmingham	Yes	Yes	Yes
Alabama	Center Point	Yes	—	—
Alabama	Citronelle	Yes	Yes	Yes
Alabama	Clay	Yes	Yes	Yes
Alabama	Cottonwood	Yes	Yes	Yes
Alabama	Daphne	Yes	Yes	—
Alabama	Decatur	Yes	Yes	Yes
Alabama	East Brewton	Yes	Yes	Yes
Alabama	Fairfield	—	Yes	Yes
Alabama	Fairhope	Yes	Yes	—
Alabama	Flomaton	Yes	Yes	Yes
Alabama	Foley	Yes	Yes	—
Alabama	Fort Payne	—	Yes	—
Alabama	Fultondale	Yes	Yes	Yes
Alabama	Geneva	Yes	—	—
Alabama	Gulf Shores	Yes	Yes	Yes
Alabama	Headland	—	Yes	Yes
Alabama	Homewood	—	Yes	Yes
Alabama	Jasper	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Alabama	Lanett	Yes	Yes	Yes
Alabama	Luverne	—	Yes	Yes
Alabama	Midfield	Yes	Yes	Yes
Alabama	Mobile	Yes	Yes	—
Alabama	Northport	—	Yes	—
Alabama	Opelika	Yes	Yes	—
Alabama	Opp	—	Yes	—
Alabama	Orange Beach	Yes	Yes	Yes
Alabama	Oxford	Yes	Yes	Yes
Alabama	Phenix City	Yes	Yes	Yes
Alabama	Prichard	Yes	Yes	—
Alabama	Robertsdale	Yes	Yes	—
Alabama	Saraland	—	Yes	Yes
Alabama	Spanish Fort	Yes	Yes	—
Alabama	Talladega	Yes	Yes	Yes
Alabama	Tuskegee	Yes	Yes	—
Alabama	Vestavia Hills	Yes	Yes	Yes
Arkansas	Fairfield Bay	Yes	Yes	Yes
Arkansas	Fayetteville	—	Yes	—
Arkansas	Highfill	Yes	Yes	—
Arkansas	Pine Bluff	—	Yes	—
Arizona	Chandler	Yes	—	—
Arizona	Coconino County	Yes	Yes	—
Arizona	Cottonwood	Yes	—	—
Arizona	Flagstaff	Yes	Yes	Yes
Arizona	Gilbert	Yes	Yes	Yes
Arizona	Goodyear	Yes	—	—
Arizona	Guadalupe	Yes	Yes	Yes
Arizona	Nogales	Yes	—	—
Arizona	Prescott	Yes	Yes	Yes
Arizona	Santa Cruz County	Yes	—	—
Arizona	Sedona	Yes	Yes	Yes
Arizona	Surprise	Yes	—	—
Arizona	Tempe	Yes	Yes	Yes
Arizona	Youngtown	Yes	Yes	Yes
California	Alameda County	Yes	Yes	Yes
California	Albany	Yes	Yes	Yes
California	Auburn	Yes	—	—
California	Belmont	Yes	Yes	Yes
California	Belvedere	Yes	—	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
California	Berkeley	Yes	Yes	Yes
California	Blue Lake	Yes	Yes	Yes
California	Burlingame	Yes	—	—
California	Butte County	Yes	—	—
California	Calabasas	Yes	Yes	Yes
California	Calexico	Yes	Yes	—
California	Calistoga	Yes	—	—
California	Campbell	—	Yes	Yes
California	Capitola	Yes	—	—
California	Carpinteria	Yes	Yes	Yes
California	Ceres	Yes	—	—
California	Chico	Yes	Yes	Yes
California	Chino Hills	Yes	—	—
California	Colfax	Yes	—	—
California	Contra Costa County	Yes	Yes	Yes
California	Cotati	Yes	—	—
California	Cupertino	Yes	—	—
California	Davis	Yes	Yes	Yes
California	Del Mar	Yes	Yes	Yes
California	Dublin	—	Yes	Yes
California	El Cajon	—	Yes	Yes
California	El Cerrito	—	Yes	Yes
California	Emeryville	—	Yes	Yes
California	Eureka	Yes	Yes	Yes
California	Fairfax	Yes	Yes	Yes
California	Fort Bragg	Yes	—	—
California	Fremont	Yes	Yes	—
California	Galt	—	Yes	Yes
California	Gilroy	—	Yes	Yes
California	Glendale	Yes	Yes	Yes
California	Goleta	Yes	—	—
California	Hayward	—	Yes	Yes
California	Hughson	Yes	—	—
California	Imperial Beach	Yes	Yes	Yes
California	Laguna Hills	Yes	Yes	Yes
California	Laguna Woods	Yes	Yes	Yes
California	Larkspur	Yes	Yes	Yes
California	Lathrop	Yes	—	—
California	Loma Linda	Yes	Yes	Yes
California	Long Beach	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
California	Mammoth Lakes	Yes	Yes	Yes
California	Marin County	Yes	Yes	Yes
California	Martinez	Yes	Yes	Yes
California	Mendocino County	Yes	—	—
California	Menlo Park	—	Yes	Yes
California	Merced	Yes	—	—
California	Mill Valley	Yes	Yes	Yes
California	Millbrae	Yes	Yes	Yes
California	Mission Viejo	—	Yes	Yes
California	Modesto	Yes	Yes	—
California	Monterey	Yes	Yes	Yes
California	Monterey County	Yes	Yes	Yes
California	Moorpark	Yes	Yes	Yes
California	Morgan Hill	Yes	Yes	Yes
California	Morro Bay	Yes	Yes	Yes
California	Mountain View	Yes	Yes	Yes
California	Murrieta	—	Yes	Yes
California	Napa	—	Yes	Yes
California	Napa County	Yes	—	—
California	Newark	Yes	Yes	Yes
California	Novato	Yes	Yes	Yes
California	Oakland	Yes	—	—
California	Ojai	Yes	—	—
California	Paradise	Yes	—	—
California	Pasadena	Yes	Yes	Yes
California	Patterson	Yes	—	—
California	Petaluma	Yes	—	—
California	Pinole	—	Yes	Yes
California	Pittsburg	—	Yes	Yes
California	Pleasant Hill	Yes	Yes	Yes
California	Pleasanton	—	Yes	—
California	Rancho Cucamonga	—	Yes	Yes
California	Richmond	Yes	Yes	Yes
California	Rohnert Park	Yes	Yes	Yes
California	Roseville	Yes	—	—
California	Ross	Yes	Yes	Yes
California	Sacramento	Yes	—	—
California	Sacramento County	Yes	—	—
California	Salinas	—	Yes	Yes
California	San Anselmo	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
California	San Bernardino County	Yes	—	—
California	San Carlos	—	Yes	Yes
California	San Diego	—	Yes	Yes
California	San Francisco	Yes	Yes	—
California	San Jose	Yes	Yes	Yes
California	San Juan Bautista	Yes	Yes	—
California	San Luis Obispo	Yes	Yes	Yes
California	San Mateo	Yes	Yes	Yes
California	San Mateo County	Yes	—	—
California	San Rafael	Yes	Yes	Yes
California	San Ramon	Yes	—	—
California	Santa Barbara	Yes	Yes	Yes
California	Santa Barbara County	Yes	—	—
California	Santa Clara	Yes	Yes	
California	Santa Clara County	Yes	Yes	Yes
California	Santa Clarita	Yes	—	—
California	Santa Cruz	Yes	—	—
California	Santa Cruz County	Yes	—	—
California	Santa Rosa	Yes	—	—
California	Saratoga	Yes	—	—
California	Sausalito	Yes	Yes	Yes
California	Scotts Valley	Yes	Yes	
California	Sebastopol	Yes	Yes	Yes
California	Shafter	Yes	Yes	—
California	Shasta County	Yes	Yes	Yes
California	Sierra Madre	—	Yes	Yes
California	Solana Beach	—	Yes	Yes
California	Solano County	Yes	—	—
California	Sonoma County	Yes	Yes	Yes
California	South Pasadena	Yes	Yes	Yes
California	Stanislaus County	Yes	—	—
California	Sunnyvale	—	Yes	—
California	Temecula	Yes	Yes	Yes
California	Tiburon	Yes	Yes	Yes
California	Tracy	Yes	—	—
California	Tuolumne County	Yes	—	—
California	Ukiah	Yes	—	—
California	Union City	Yes	Yes	Yes
California	Vallejo	Yes	—	—
California	Ventura	Yes	—	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
California	Ventura County	Yes	—	—
California	Visalia	Yes	Yes	—
California	Watsonville	Yes	—	—
California	Yountville	Yes	—	—
Colorado	Alamosa	—	Yes	—
Colorado	Arvada	Yes	Yes	Yes
Colorado	Avon	Yes	Yes	Yes
Colorado	Boulder	Yes	Yes	Yes
Colorado	Boulder County	Yes	Yes	Yes
Colorado	Breckenridge	—	Yes	Yes
Colorado	Brighton	—	Yes	Yes
Colorado	Central City	—	Yes	Yes
Colorado	Dillon	—	Yes	Yes
Colorado	Eagle County	Yes	Yes	Yes
Colorado	Edgewater	Yes	Yes	Yes
Colorado	Firestone	Yes	—	—
Colorado	Fort Collins	Yes	Yes	Yes
Colorado	Frisco	—	Yes	Yes
Colorado	Golden	—	Yes	Yes
Colorado	Grand Junction	—	Yes	Yes
Colorado	Greeley	—	Yes	Yes
Colorado	Lakewood	—	Yes	Yes
Colorado	Longmont	—	Yes	Yes
Colorado	Louisville	—	Yes	Yes
Colorado	Loveland	—	Yes	Yes
Colorado	Monte Vista	—	Yes	Yes
Colorado	Pueblo	Yes	Yes	Yes
Colorado	Rifle	—	Yes	Yes
Colorado	San Luis	Yes	Yes	Yes
Colorado	Silverthorne	—	Yes	Yes
Colorado	Snowmass Village	Yes	Yes	Yes
Colorado	Steamboat Springs	—	Yes	—
Colorado	Summit County	—	Yes	Yes
Colorado	Superior	—	Yes	Yes
Colorado	Telluride	Yes	Yes	Yes
Colorado	Timnath	Yes	Yes	Yes
Colorado	Winter Park	—	Yes	Yes
District of Columbia	Washington	Yes	Yes	Yes
Georgia	Athens/Clarke County	—	Yes	Yes
Georgia	Berkeley Lake	Yes	Yes	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Georgia	Buena Vista	Yes	Yes	Yes
Georgia	Chatham County	Yes	Yes	Yes
Georgia	Columbia County	Yes	Yes	—
Georgia	Cordele	Yes	—	—
Georgia	Decatur	Yes	Yes	—
Georgia	DeKalb County	Yes	—	—
Georgia	Douglas	Yes	Yes	—
Georgia	Douglas County	Yes	—	—
Georgia	Douglasville	Yes	—	—
Georgia	Dunwoody	Yes	—	—
Georgia	Effingham County	—	Yes	Yes
Georgia	Gainesville	—	Yes	Yes
Georgia	Loganville	Yes	Yes	—
Georgia	Madison	—	Yes	—
Georgia	Morrow	Yes	Yes	Yes
Georgia	Peachtree City	—	Yes	—
Georgia	Savannah	Yes	Yes	Yes
Georgia	Snellville	—	Yes	Yes
Georgia	Tift County	—	Yes	Yes
Georgia	Tifton	—	Yes	—
Georgia	Valdosta	Yes	Yes	—
Hawaii	Hawaii County	Yes	Yes	—
Hawaii	Honolulu	Yes	Yes	—
Hawaii	Maui County	—	Yes	—
Idaho	Glenwood	Yes	Yes	Yes
Idaho	Boise	Yes	Yes	Yes
Idaho	Moscow	—	—	Yes
Illinois	Arlington Heights	Yes	Yes	—
Illinois	Barrington	Yes	Yes	Yes
Illinois	Batavia	Yes	Yes	Yes
Illinois	Bedford Park	Yes	Yes	Yes
Illinois	Benton	Yes	Yes	Yes
Illinois	Berwyn	Yes	—	—
Illinois	Bloomington	Yes	Yes	Yes
Illinois	Buffalo Grove	Yes	Yes	Yes
Illinois	Burr Ridge	Yes	Yes	Yes
Illinois	Calumet City	Yes	—	—
Illinois	Carbondale	—	Yes	Yes
Illinois	Centralia	Yes	Yes	Yes
Illinois	Chicago	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Illinois	Chicago Heights	Yes	—	—
Illinois	Cook County	Yes	Yes	Yes
Illinois	Countryside	Yes	Yes	Yes
Illinois	Deerfield	Yes	Yes	Yes
Illinois	DeKalb	Yes	Yes	Yes
Illinois	East Moline	Yes	Yes	Yes
Illinois	East Peoria	Yes	Yes	Yes
Illinois	Elk Grove Village	Yes	Yes	Yes
Illinois	Elmwood Park	Yes	Yes	Yes
Illinois	Evanston	Yes	Yes	Yes
Illinois	Frankfort	Yes	Yes	Yes
Illinois	Galesburg	Yes	Yes	Yes
Illinois	Hanover Park	Yes	Yes	—
Illinois	Hawthorn Woods	Yes	Yes	Yes
Illinois	Highland Park	Yes	Yes	Yes
Illinois	Hinsdale	Yes	Yes	Yes
Illinois	Hoffman Estates	Yes	Yes	—
Illinois	Indian Head Park	Yes	—	—
Illinois	Justice	Yes	—	—
Illinois	La Grange	Yes	Yes	—
Illinois	La Grange Park	Yes	—	Yes
Illinois	Lake Bluff	Yes	Yes	Yes
Illinois	Lake County	Yes	Yes	Yes
Illinois	Lake Forest	Yes	Yes	Yes
Illinois	Lemont	Yes	Yes	Yes
Illinois	Libertyville	Yes	Yes	Yes
Illinois	Lincolnshire	Yes	—	—
Illinois	Lincolnwood	Yes	Yes	Yes
Illinois	Lindenhurst	Yes	Yes	Yes
Illinois	Long Grove	Yes	—	—
Illinois	Mclean County	Yes	Yes	—
Illinois	Milan	Yes	Yes	Yes
Illinois	Morton Grove	Yes	Yes	Yes
Illinois	Naperville	Yes	Yes	Yes
Illinois	New Lenox	Yes	Yes	Yes
Illinois	Niles	Yes	—	—
Illinois	Normal	Yes	Yes	Yes
Illinois	Norridge	Yes	Yes	Yes
Illinois	North Aurora	Yes	Yes	Yes
Illinois	Northbrook	Yes	Yes	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Illinois	Oak Lawn	Yes	—	—
Illinois	Oak Park	Yes	Yes	Yes
Illinois	Orland Park	Yes	Yes	Yes
Illinois	Palatine	Yes	Yes	Yes
Illinois	Palos Hills	Yes	Yes	Yes
Illinois	Park Forest	Yes	Yes	Yes
Illinois	Park Ridge	Yes	Yes	Yes
Illinois	Plainfield	Yes	Yes	Yes
Illinois	Prospect Heights	Yes	Yes	Yes
Illinois	Riverside	Yes	Yes	—
Illinois	Rochelle	Yes	Yes	Yes
Illinois	Rolling Meadows	Yes	Yes	Yes
Illinois	Sangamon County	Yes	Yes	Yes
Illinois	Schaumburg	Yes	Yes	—
Illinois	Skokie	Yes	—	—
Illinois	South Beloit	Yes	Yes	Yes
Illinois	Springfield	—	Yes	Yes
Illinois	Steger	Yes	—	—
Illinois	Taylor Springs	Yes	Yes	Yes
Illinois	Tinley Park	Yes	Yes	Yes
Illinois	Urbana	Yes	Yes	Yes
Illinois	Vernon Hills	Yes	Yes	Yes
Illinois	Villa Grove	Yes	Yes	Yes
Illinois	Wamac	Yes	Yes	Yes
Illinois	Washington	Yes	Yes	Yes
Illinois	Westchester	Yes	—	—
Illinois	Wheaton	Yes	Yes	—
Illinois	Wheeling	Yes	—	—
Illinois	Wilmette	Yes	Yes	Yes
Illinois	Worth	Yes	Yes	Yes
Indiana	Allen County	Yes	Yes	—
Indiana	Avon	Yes	Yes	—
Indiana	Bloomington	Yes	Yes	Yes
Indiana	Carmel	Yes	Yes	—
Indiana	Chesterton	Yes	—	—
Indiana	Crawfordsville	—	—	Yes
Indiana	Crown Point	Yes	Yes	—
Indiana	Cumberland	Yes	Yes	Yes
Indiana	Delaware County	Yes	Yes	Yes
Indiana	Elkhart	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Indiana	Evansville	Yes	Yes	Yes
Indiana	Fort Wayne	Yes	Yes	Yes
Indiana	Franklin	Yes	Yes	Yes
Indiana	Goshen	Yes	—	—
Indiana	Greencastle	Yes	Yes	Yes
Indiana	Greenfield	Yes	Yes	—
Indiana	Greensburg	Yes	Yes	—
Indiana	Greenwood	Yes	Yes	—
Indiana	Hancock County	Yes	Yes	Yes
Indiana	Henry County	Yes	Yes	—
Indiana	Indianapolis/Marion County	Yes	Yes	Yes
Indiana	Jeffersonville	Yes	Yes	—
Indiana	Kokomo	Yes	Yes	—
Indiana	Lawrence	Yes	Yes	Yes
Indiana	Madison	Yes	Yes	—
Indiana	Monroe County	Yes	Yes	Yes
Indiana	Plainfield	Yes	Yes	Yes
Indiana	Seymour	Yes	Yes	—
Indiana	Shelbyville	Yes	—	—
Indiana	Speedway	Yes	Yes	—
Indiana	Terre Haute	Yes	Yes	Yes
Indiana	Valparaiso	Yes	—	—
Indiana	Vanderburgh County	Yes	Yes	Yes
Indiana	Vigo County	Yes	Yes	Yes
Indiana	West Lafayette	Yes	Yes	Yes
Indiana	Westfield	Yes	—	—
Indiana	Whitestown	Yes	—	—
Indiana	Zionsville	Yes	Yes	Yes
Kansas	Abilene	—	Yes	—
Kansas	Bel Aire	—	Yes	Yes
Kansas	Derby	Yes	Yes	Yes
Kansas	Emporia	—	Yes	Yes
Kansas	Fairway	Yes	Yes	Yes
Kansas	Garden City	—	Yes	Yes
Kansas	Harvey County	Yes	Yes	Yes
Kansas	Hesston	Yes	Yes	Yes
Kansas	Johnson County	—	Yes	Yes
Kansas	Kansas City/ Wyandotte County	Yes	Yes	Yes
Kansas	Lawrence	—	Yes	Yes
Kansas	Leawood	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Kansas	Lenexa	Yes	Yes	Yes
Kansas	Maize	—	Yes	Yes
Kansas	Manhattan	Yes	Yes	Yes
Kansas	Merriam	Yes	Yes	Yes
Kansas	Mission	Yes	Yes	Yes
Kansas	Newton	Yes	Yes	Yes
Kansas	North Newton	Yes	Yes	Yes
Kansas	Olathe	Yes	Yes	Yes
Kansas	Ottawa	—	Yes	—
Kansas	Overland Park	Yes	Yes	Yes
Kansas	Prairie Village	Yes	Yes	Yes
Kansas	Pratt	Yes	—	—
Kansas	Pratt County	Yes	Yes	Yes
Kansas	Roeland Park	Yes	Yes	Yes
Kansas	Salina	Yes	Yes	Yes
Kansas	Shawnee	Yes	—	—
Kansas	Topeka	Yes	Yes	Yes
Kansas	Valley Center	Yes	Yes	Yes
Kansas	Walton	—	Yes	Yes
Kansas	Westwood	Yes	Yes	Yes
Kansas	Winfield	—	Yes	Yes
Kentucky	Ashland	Yes	Yes	Yes
Kentucky	Bardstown	Yes	Yes	Yes
Kentucky	Bowling Green	Yes	Yes	Yes
Kentucky	Campbellsville	Yes	Yes	Yes
Kentucky	Clark County	Yes	Yes	Yes
Kentucky	Corbin	Yes	Yes	Yes
Kentucky	Danville	Yes	Yes	Yes
Kentucky	Elizabethtown	Yes	Yes	Yes
Kentucky	Frankfort	—	Yes	Yes
Kentucky	Franklin County	—	Yes	Yes
Kentucky	Georgetown	Yes	Yes	Yes
Kentucky	Glasgow	—	Yes	Yes
Kentucky	Hardin County	Yes	Yes	Yes
Kentucky	Henderson	Yes	—	—
Kentucky	Kenton County	Yes	—	—
Kentucky	Letcher County	—	Yes	—
Kentucky	Lexington/Fayette County	Yes	Yes	Yes
Kentucky	London	Yes	Yes	Yes
Kentucky	Louisville/Jefferson County	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Kentucky	Madison County	Yes	Yes	Yes
Kentucky	Manchester	Yes	Yes	Yes
Kentucky	Morehead	Yes	Yes	Yes
Kentucky	Oldham County	—	Yes	—
Kentucky	Paducah	—	Yes	Yes
Kentucky	Paintsville	—	Yes	—
Kentucky	Pikeville	—	Yes	—
Kentucky	Prestonsburg	Yes	Yes	Yes
Kentucky	Radcliff	Yes	Yes	Yes
Kentucky	Somerset	Yes	Yes	Yes
Kentucky	Williamsburg	Yes	Yes	Yes
Kentucky	Woodford County	Yes	Yes	Yes
Louisiana	Alexandria	Yes	Yes	Yes
Louisiana	Gibsland	Yes	—	—
Louisiana	Grambling	Yes	—	—
Louisiana	Lafayette	Yes	—	—
Louisiana	Lafayette Parish	Yes	—	—
Louisiana	Mandeville	Yes	—	—
Louisiana	Sulphur	Yes	—	—
Massachusetts	Abington	Yes	Yes	Yes
Massachusetts	Acushnet	—	Yes	—
Massachusetts	Adams	Yes	—	—
Massachusetts	Amherst	Yes	Yes	Yes
Massachusetts	Andover		Yes	—
Massachusetts	Aquinnah	Yes	—	—
Massachusetts	Arlington	Yes	Yes	Yes
Massachusetts	Ashland	Yes	—	—
Massachusetts	Barnstable	—	Yes	Yes
Massachusetts	Barre	—	Yes	Yes
Massachusetts	Belchertown	—	Yes	Yes
Massachusetts	Bellingham	—	Yes	—
Massachusetts	Belmont	—	Yes	—
Massachusetts	Beverly	Yes	Yes	Yes
Massachusetts	Boston	Yes	Yes	Yes
Massachusetts	Bourne	Yes	Yes	Yes
Massachusetts	Braintree	Yes	Yes	Yes
Massachusetts	Brewster	Yes	Yes	Yes
Massachusetts	Bridgewater	Yes	Yes	Yes
Massachusetts	Brimfield	Yes	Yes	Yes
Massachusetts	Brookline	—	Yes	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Massachusetts	Buckland	Yes	Yes	Yes
Massachusetts	Cambridge	Yes	Yes	—
Massachusetts	Canton	Yes	Yes	Yes
Massachusetts	Carver	Yes	Yes	Yes
Massachusetts	Chatham	Yes	Yes	Yes
Massachusetts	Chelsea	Yes	Yes	Yes
Massachusetts	Chilmark	Yes	Yes	Yes
Massachusetts	Cohasset	—	Yes	Yes
Massachusetts	Concord	—	Yes	Yes
Massachusetts	Dedham	Yes	Yes	Yes
Massachusetts	Dover	—	Yes	Yes
Massachusetts	Dracut	Yes	—	—
Massachusetts	Duxbury	Yes	Yes	Yes
Massachusetts	Easthampton	Yes	Yes	Yes
Massachusetts	Easton	—	Yes	Yes
Massachusetts	Edgartown	Yes	Yes	Yes
Massachusetts	Egremont	Yes	Yes	Yes
Massachusetts	Essex	Yes	Yes	Yes
Massachusetts	Everett	Yes	Yes	Yes
Massachusetts	Framingham	Yes	Yes	Yes
Massachusetts	Freetown	Yes	Yes	Yes
Massachusetts	Great Barrington	Yes	Yes	Yes
Massachusetts	Hancock	Yes	Yes	Yes
Massachusetts	Hatfield	Yes	Yes	Yes
Massachusetts	Haverhill	Yes	—	Yes
Massachusetts	Hingham	—	Yes	Yes
Massachusetts	Holbrook	Yes	—	—
Massachusetts	Holliston	Yes	Yes	Yes
Massachusetts	Holyoke	Yes	—	—
Massachusetts	Hopkinton	—	Yes	Yes
Massachusetts	Hubbardston	—	Yes	Yes
Massachusetts	Lancaster	Yes	Yes	Yes
Massachusetts	Lee	Yes	Yes	Yes
Massachusetts	Leicester	Yes	—	—
Massachusetts	Lenox	Yes	Yes	Yes
Massachusetts	Lexington	Yes	Yes	Yes
Massachusetts	Lincoln	Yes	Yes	Yes
Massachusetts	Littleton	—	Yes	Yes
Massachusetts	Lynn	Yes	Yes	Yes
Massachusetts	Marblehead	—	Yes	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Massachusetts	Marion	Yes	Yes	Yes
Massachusetts	Marshfield	Yes	—	—
Massachusetts	Mashpee	Yes	Yes	Yes
Massachusetts	Maynard	—	Yes	Yes
Massachusetts	Medfield	Yes	Yes	Yes
Massachusetts	Melrose	—	Yes	Yes
Massachusetts	Middleton	Yes	Yes	Yes
Massachusetts	Millville	Yes	Yes	Yes
Massachusetts	Milton	Yes	Yes	Yes
Massachusetts	Monterey	Yes	Yes	Yes
Massachusetts	Nantucket	Yes	Yes	Yes
Massachusetts	Needham	Yes	Yes	Yes
Massachusetts	New Bedford	Yes	Yes	Yes
Massachusetts	New Braintree	—	Yes	Yes
Massachusetts	Newburyport	Yes	—	—
Massachusetts	Norfolk	—	Yes	Yes
Massachusetts	North Adams	Yes	—	—
Massachusetts	Northampton	Yes	Yes	Yes
Massachusetts	Norton	—	Yes	Yes
Massachusetts	Norwood	Yes	Yes	Yes
Massachusetts	Oak Bluffs	Yes	Yes	Yes
Massachusetts	Orleans	—	Yes	Yes
Massachusetts	Oxford	Yes	Yes	Yes
Massachusetts	Peabody	Yes	Yes	Yes
Massachusetts	Pittsfield	Yes	Yes	Yes
Massachusetts	Plymouth	—	Yes	Yes
Massachusetts	Provincetown	—	Yes	Yes
Massachusetts	Quincy	Yes	Yes	Yes
Massachusetts	Reading	—	Yes	Yes
Massachusetts	Revere	Yes	Yes	Yes
Massachusetts	Richmond	Yes	Yes	Yes
Massachusetts	Salem	Yes	Yes	Yes
Massachusetts	Sandwich	Yes	Yes	Yes
Massachusetts	Saugus	Yes	Yes	Yes
Massachusetts	Scituate	—	Yes	Yes
Massachusetts	Sharon	—	Yes	Yes
Massachusetts	Somerset	Yes	Yes	Yes
Massachusetts	Somerville	Yes	Yes	Yes
Massachusetts	Southborough	—	Yes	Yes
Massachusetts	Sterling	—	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Massachusetts	Stockbridge	Yes	Yes	Yes
Massachusetts	Stoneham	—	Yes	Yes
Massachusetts	Tisbury	Yes	Yes	Yes
Massachusetts	Truro	Yes	Yes	Yes
Massachusetts	Tyngsborough	Yes	Yes	Yes
Massachusetts	Tyringham	Yes	Yes	Yes
Massachusetts	Wakefield	Yes	Yes	Yes
Massachusetts	Walpole	Yes	Yes	Yes
Massachusetts	Wareham	—	Yes	Yes
Massachusetts	Watertown	Yes	Yes	Yes
Massachusetts	Wayland	Yes	Yes	—
Massachusetts	Wellesley	—	Yes	—
Massachusetts	Wellfleet	—	Yes	Yes
Massachusetts	West Tisbury	Yes	Yes	—
Massachusetts	Westford	Yes	Yes	Yes
Massachusetts	Westport	Yes	Yes	Yes
Massachusetts	Westwood	—	Yes	Yes
Massachusetts	Weymouth	Yes	Yes	Yes
Massachusetts	Whately	Yes	Yes	Yes
Massachusetts	Williamstown	—	Yes	Yes
Massachusetts	Winchendon	—	Yes	—
Massachusetts	Winchester	Yes	Yes	Yes
Massachusetts	Woburn	—	Yes	—
Massachusetts	Wrentham	Yes	Yes	Yes
Massachusetts	Yarmouth	—	Yes	Yes
Maryland	Baltimore	Yes	Yes	Yes
Maryland	Charles County	—	Yes	—
Maryland	Gaithersburg	—	Yes	—
Maryland	Howard County	Yes	Yes	Yes
Maryland	Kensington	—	Yes	Yes
Maryland	La Plata	—	Yes	Yes
Maryland	Montgomery County	—	Yes	Yes
Maryland	Prince George's County	—	Yes	Yes
Maryland	Rockville	—	Yes	Yes
Maryland	Takoma Park	—	Yes	Yes
Maryland	Talbot County	—	Yes	—
Michigan	Alger County	Yes	—	—
Michigan	Baraga County	Yes	—	—
Michigan	Benzie County	Yes	—	—
Michigan	Berrien County	Yes	—	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Michigan	Calhoun County	Yes	—	—
Michigan	Detroit	Yes	—	—
Michigan	Gogebic County	Yes	—	—
Michigan	Grand Rapids	Yes	—	—
Michigan	Houghton County	Yes	—	—
Michigan	Leelanau County	Yes	—	—
Michigan	Lenawee County	Yes	—	—
Michigan	Mackinac County	Yes	—	—
Michigan	Marquette	Yes	—	—
Michigan	Marquette County	Yes	—	—
Michigan	Midland County	Yes	—	—
Michigan	Muskegon County	Yes	—	—
Michigan	Ottawa County	Yes	—	—
Michigan	Schoolcraft County	Yes	—	—
Michigan	St. Clair County	Yes	—	—
Michigan	Traverse City	Yes	—	—
Michigan	Washtenaw County	Yes	—	—
Minnesota	Beltrami County	Yes	—	—
Minnesota	Bloomington	Yes	Yes	Yes
Minnesota	Carlton County	Yes	Yes	Yes
Minnesota	Cottage Grove	Yes	Yes	Yes
Minnesota	Duluth	Yes	Yes	Yes
Minnesota	Golden Valley	Yes	Yes	Yes
Minnesota	Hennepin County	—	Yes	Yes
Minnesota	Hutchinson	Yes	Yes	Yes
Minnesota	Mankato	Yes	Yes	Yes
Minnesota	McLeod County	Yes	—	—
Minnesota	Minneapolis	—	Yes	Yes
Minnesota	Moorhead	Yes	—	—
Minnesota	Olmsted County	Yes	Yes	Yes
Minnesota	St. Paul	—	Yes	Yes
Missouri	Ballwin	Yes	Yes	Yes
Missouri	Belton	Yes	—	Yes
Missouri	Blue Springs	Yes	—	—
Missouri	Brentwood	Yes	Yes	Yes
Missouri	Chillicothe	—	Yes	Yes
Missouri	Clayton	Yes	Yes	—
Missouri	Columbia	—	Yes	Yes
Missouri	Creve Coeur	Yes	Yes	Yes
Missouri	Fulton	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Missouri	Gladstone	Yes	—	—
Missouri	Grandview	Yes	Yes	—
Missouri	Hannibal	Yes	Yes	Yes
Missouri	Hazelwood	Yes	Yes	—
Missouri	Independence	Yes	Yes	Yes
Missouri	Jefferson City	Yes	Yes	Yes
Missouri	Kansas City	Yes	Yes	Yes
Missouri	Kirksville	—	Yes	Yes
Missouri	Kirkwood	Yes	Yes	Yes
Missouri	Lake Saint Louis	Yes	Yes	Yes
Missouri	Lee's Summit	Yes	Yes	Yes
Missouri	Liberty	Yes	Yes	Yes
Missouri	Maryville	Yes	Yes	Yes
Missouri	Nixa	—	Yes	—
Missouri	North Kansas City	Yes	Yes	Yes
Missouri	O'Fallon	Yes	Yes	Yes
Missouri	Parkville	Yes	—	—
Missouri	Raymore	Yes	—	—
Missouri	Rolla	Yes	Yes	Yes
Missouri	Springfield	Yes	Yes	Yes
Missouri	St. Louis	Yes	Yes	—
Missouri	St. Louis County	Yes	Yes	—
Missouri	Warrensburg	Yes	Yes	—
Mississippi	Aberdeen	—	Yes	Yes
Mississippi	Amory	Yes	Yes	Yes
Mississippi	Anguilla	Yes	Yes	Yes
Mississippi	Arcola	Yes	Yes	Yes
Mississippi	Bassfield	Yes	Yes	Yes
Mississippi	Batesville	—	Yes	Yes
Mississippi	Belzoni	Yes	Yes	Yes
Mississippi	Booneville	Yes	Yes	—
Mississippi	Brandon	—	Yes	—
Mississippi	Brookhaven	Yes	Yes	Yes
Mississippi	Byram	Yes	Yes	Yes
Mississippi	Calhoun City	Yes	Yes	Yes
Mississippi	Canton	Yes	Yes	Yes
Mississippi	Centreville	Yes	Yes	Yes
Mississippi	Clinton	—	Yes	Yes
Mississippi	Coahoma County	Yes	Yes	Yes
Mississippi	Coldwater	Yes	—	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Mississippi	Collins	Yes	Yes	Yes
Mississippi	Corinth	Yes	Yes	—
Mississippi	Crystal Springs	Yes	Yes	Yes
Mississippi	Duncan	Yes	Yes	Yes
Mississippi	Durant	Yes	Yes	Yes
Mississippi	Ecru	—	Yes	Yes
Mississippi	Flora	Yes	Yes	Yes
Mississippi	Flowood	Yes	Yes	—
Mississippi	Forest	Yes	Yes	Yes
Mississippi	Georgetown	Yes	Yes	Yes
Mississippi	Greenwood	Yes	Yes	Yes
Mississippi	Grenada	—	Yes	Yes
Mississippi	Gulfport	Yes	Yes	—
Mississippi	Hattiesburg	Yes	Yes	Yes
Mississippi	Hernando	Yes	Yes	Yes
Mississippi	Hollandale	Yes	Yes	Yes
Mississippi	Jackson	Yes	Yes	Yes
Mississippi	Jonestown	Yes	Yes	Yes
Mississippi	Kosciusko	Yes	Yes	Yes
Mississippi	Laurel	Yes	Yes	Yes
Mississippi	Lumberton	Yes	Yes	Yes
Mississippi	Madison	Yes	Yes	Yes
Mississippi	Mayersville	Yes	Yes	Yes
Mississippi	Meridian	Yes	Yes	Yes
Mississippi	Metcalfe	Yes	Yes	Yes
Mississippi	Monticello	—	Yes	Yes
Mississippi	Moss Point	Yes	Yes	Yes
Mississippi	New Albany	Yes	Yes	Yes
Mississippi	New Augusta	Yes	Yes	Yes
Mississippi	Oxford	—	Yes	Yes
Mississippi	Pearl	—	Yes	—
Mississippi	Petal	Yes	Yes	Yes
Mississippi	Picayune	—	Yes	—
Mississippi	Pontotoc	—	Yes	Yes
Mississippi	Prentiss	Yes	Yes	Yes
Mississippi	Ridgeland	Yes	Yes	Yes
Mississippi	Rienzi	—	Yes	—
Mississippi	Rolling Fork	Yes	Yes	Yes
Mississippi	Senatobia	—	Yes	Yes
Mississippi	Shuqualak	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Mississippi	Starkville	Yes	Yes	Yes
Mississippi	Sumner	Yes	Yes	Yes
Mississippi	Sumrall	Yes	Yes	Yes
Mississippi	Tupelo	Yes	Yes	Yes
Mississippi	Verona	Yes	Yes	Yes
Mississippi	Walls	Yes	Yes	—
Mississippi	Wesson	Yes	Yes	Yes
Mississippi	West	Yes	—	—
Montana	Bozeman	Yes	Yes	—
Montana	Helena	Yes	Yes	Yes
North Carolina	Boone	—	Yes	Yes
North Carolina	Garland	—	Yes	Yes
North Carolina	Montreat	Yes	—	—
North Carolina	Orange County	—	Yes	Yes
North Dakota	Bismarck	Yes	Yes	Yes
North Dakota	Cavalier	Yes	Yes	Yes
North Dakota	Devils Lake	Yes	Yes	Yes
North Dakota	Fargo	Yes	Yes	Yes
North Dakota	Grafton	Yes	—	—
North Dakota	Grand Forks	Yes	Yes	Yes
North Dakota	Linton	Yes	Yes	Yes
North Dakota	Lisbon	Yes	Yes	Yes
North Dakota	Munich	Yes	Yes	Yes
North Dakota	Napoleon	Yes	Yes	Yes
North Dakota	Pembina	Yes	Yes	Yes
North Dakota	West Fargo	Yes	Yes	Yes
Nebraska	Grand Island	Yes	Yes	Yes
Nebraska	Humboldt	Yes	Yes	Yes
Nebraska	Lincoln	Yes	Yes	Yes
New Jersey	Atlantic City	Yes	Yes	Yes
New Jersey	Highland Park Borough	Yes	—	—
New Jersey	Holmdel Township	Yes	—	—
New Jersey	Livingston Township	Yes	—	—
New Jersey	Manville Borough	Yes	—	—
New Mexico	Alamogordo	—	Yes	Yes
New Mexico	Albuquerque	Yes	—	—
New Mexico	Bayard	Yes	Yes	Yes
New Mexico	Carlsbad	Yes	—	—
New Mexico	Curry County	—	Yes	Yes
New Mexico	Dona Ana County	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
New Mexico	Edgewood	Yes	Yes	Yes
New Mexico	Elephant Butte	—	Yes	Yes
New Mexico	Espanola	Yes	Yes	Yes
New Mexico	Farmington	—	Yes	Yes
New Mexico	Gallup	—	Yes	Yes
New Mexico	Las Cruces	—	Yes	Yes
New Mexico	Los Lunas	—	Yes	Yes
New Mexico	Magdalena	—	Yes	Yes
New Mexico	Mesilla	Yes	Yes	Yes
New Mexico	Portales	—	Yes	Yes
New Mexico	Rio Rancho	—	Yes	Yes
New Mexico	Roswell	—	Yes	Yes
New Mexico	Santa Clara	Yes	Yes	—
New Mexico	Santa Fe	Yes	Yes	Yes
New Mexico	Taos	—	Yes	Yes
New Mexico	Tucumcari	—	Yes	Yes
New York	Dutchess County	Yes	Yes	—
New York	Nassau County	Yes	Yes	Yes
New York	New York City	Yes	Yes	Yes
New York	Suffolk County	Yes	Yes	Yes
New York	Tompkins County	Yes	Yes	Yes
New York	Westchester County	Yes	Yes	Yes
Ohio	Bexley	Yes	Yes	Yes
Ohio	Centerville	Yes	—	—
Ohio	Columbus	Yes	Yes	Yes
Ohio	Dublin	Yes	Yes	Yes
Ohio	Findlay	Yes	—	—
Ohio	Gahanna	Yes	Yes	Yes
Ohio	Grandview Heights	Yes	Yes	Yes
Ohio	Granville	Yes	Yes	Yes
Ohio	Heath	Yes	Yes	Yes
Ohio	Hilliard	Yes	—	—
Ohio	Marble Cliff	Yes	Yes	Yes
Ohio	New Albany	Yes	Yes	Yes
Ohio	Newark	Yes	—	—
Ohio	Powell	Yes	Yes	Yes
Ohio	Summit County	Yes	Yes	Yes
Ohio	Upper Arlington	Yes	Yes	Yes
Ohio	Westerville	Yes	Yes	Yes
Ohio	Worthington	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Oregon	Baker City	Yes	—	—
Oregon	Benton County	Yes	—	—
Oregon	Central Point	Yes	—	—
Oregon	Corvallis	Yes	Yes	Yes
Oregon	Dallas	Yes	Yes	Yes
Oregon	Eugene	Yes	Yes	Yes
Oregon	Independence	Yes	Yes	Yes
Oregon	Manzanita	Yes	—	—
Oregon	Philomath	Yes	Yes	Yes
Oregon	Rockaway Beach	Yes	—	—
Oregon	St. Helens	Yes	—	—
Oregon	Tillamook	Yes	—	—
Oregon	Tillamook County	Yes	—	—
Oregon	Tualatin	Yes	—	—
Oregon	Wheeler	Yes	—	—
Pennsylvania	Philadelphia	—	Yes	—
South Carolina	Aiken	Yes	Yes	Yes
South Carolina	Aiken County	Yes	Yes	Yes
South Carolina	Atlantic Beach	—	Yes	Yes
South Carolina	Beaufort	Yes	Yes	Yes
South Carolina	Beaufort County	Yes	Yes	Yes
South Carolina	Bluffton	Yes	—	—
South Carolina	Camden	Yes	Yes	Yes
South Carolina	Cayce	Yes	Yes	Yes
South Carolina	Chapin	Yes	Yes	Yes
South Carolina	Charleston	—	Yes	Yes
South Carolina	Charleston County	—	Yes	Yes
South Carolina	Chesnee	Yes	Yes	Yes
South Carolina	Clemson	—	Yes	Yes
South Carolina	Columbia	Yes	Yes	Yes
South Carolina	Easley	Yes	Yes	Yes
South Carolina	Edisto Beach	Yes	Yes	Yes
South Carolina	Florence	—	Yes	Yes
South Carolina	Fort Mill	Yes	Yes	Yes
South Carolina	Greenville	Yes	Yes	Yes
South Carolina	Hampton	Yes	Yes	Yes
South Carolina	Hartsville	Yes	Yes	Yes
South Carolina	Hilton Head Island	—	Yes	Yes
South Carolina	Hollywood	Yes	Yes	Yes
South Carolina	Isle of Palms	—	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
South Carolina	Kershaw	Yes	Yes	Yes
South Carolina	Lancaster County	Yes	Yes	Yes
South Carolina	Lexington	Yes	Yes	Yes
South Carolina	Lexington County	Yes	Yes	Yes
South Carolina	Liberty	—	Yes	—
South Carolina	Mount Pleasant	—	Yes	Yes
South Carolina	North Augusta	Yes	Yes	Yes
South Carolina	North Myrtle Beach	Yes	Yes	Yes
South Carolina	Pendleton	—	Yes	Yes
South Carolina	Pickens	—	Yes	Yes
South Carolina	Pine Ridge	Yes	Yes	Yes
South Carolina	Quinby	—	Yes	Yes
South Carolina	Ravenel	—	Yes	Yes
South Carolina	Richland County	Yes	Yes	Yes
South Carolina	Rock Hill	Yes	Yes	Yes
South Carolina	Simpsonville	Yes	Yes	Yes
South Carolina	South Congaree	Yes	Yes	Yes
South Carolina	Spartanburg	Yes	Yes	Yes
South Carolina	Springdale	Yes	Yes	Yes
South Carolina	Sullivan's Island	—	Yes	Yes
South Carolina	Summerville	—	Yes	Yes
South Carolina	Sumter	Yes	Yes	Yes
South Carolina	Surfside Beach	Yes	Yes	Yes
South Carolina	Timmonsville	—	Yes	Yes
South Carolina	Walterboro	Yes	Yes	Yes
South Carolina	West Columbia	Yes	Yes	Yes
South Carolina	York County	Yes	Yes	Yes
Texas	Abilene	Yes	Yes	Yes
Texas	Alpine	—	—	Yes
Texas	Alton	Yes	Yes	Yes
Texas	Angleton	—	Yes	—
Texas	Arlington	—	Yes	—
Texas	Athens	Yes	—	—
Texas	Austin	Yes	Yes	Yes
Texas	Baytown	Yes	Yes	Yes
Texas	Beaumont	Yes	Yes	Yes
Texas	Benbrook	Yes	Yes	Yes
Texas	Boerne	—	Yes	—
Texas	Brenham	—	Yes	—
Texas	Brownsville	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Texas	Caldwell	Yes	—	—
Texas	College Station	Yes	Yes	Yes
Texas	Conroe	Yes	Yes	—
Texas	Copperas Cove	Yes	Yes	Yes
Texas	Corpus Christi	Yes	Yes	Yes
Texas	Dallas	Yes	Yes	Yes
Texas	El Lago	—	Yes	Yes
Texas	El Paso	Yes	Yes	Yes
Texas	Ennis	Yes	Yes	Yes
Texas	Flower Mound	Yes	Yes	Yes
Texas	Forney	—	Yes	—
Texas	Fort Worth	Yes	Yes	—
Texas	Frisco	Yes	Yes	Yes
Texas	Galveston	Yes	—	—
Texas	Harlingen	Yes	Yes	Yes
Texas	Hewitt	Yes	—	—
Texas	Highland Village	Yes	—	—
Texas	Horseshoe Bay	Yes	Yes	Yes
Texas	Houston	Yes	Yes	Yes
Texas	Humble	Yes	Yes	—
Texas	Kaufman	Yes	—	—
Texas	Kerrville	—	—	Yes
Texas	Kilgore	Yes	—	—
Texas	Killeen	Yes	Yes	—
Texas	Laredo	Yes	Yes	Yes
Texas	Leander	Yes	—	—
Texas	Lewisville	—	Yes	Yes
Texas	Marshall	Yes	Yes	Yes
Texas	McKinney	Yes	Yes	Yes
Texas	Mesquite	—	Yes	Yes
Texas	Missouri City	Yes	Yes	Yes
Texas	Nacogdoches	Yes	Yes	Yes
Texas	New Braunfels	Yes	—	—
Texas	Palestine	Yes	—	—
Texas	Pasadena	Yes	Yes	—
Texas	Pearland	Yes	Yes	Yes
Texas	Plano	Yes	Yes	Yes
Texas	Portland	Yes	Yes	—
Texas	Prosper	—	Yes	—
Texas	Richardson	Yes	—	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Texas	Robinson	Yes	Yes	—
Texas	Rockwall	—	Yes	—
Texas	Rollingwood	—	Yes	Yes
Texas	Rosenberg	Yes	Yes	—
Texas	Round Rock	Yes	Yes	—
Texas	Rowlett	Yes	Yes	Yes
Texas	San Angelo	Yes	Yes	Yes
Texas	San Antonio	Yes	Yes	Yes
Texas	Socorro	Yes	Yes	Yes
Texas	Southlake	Yes	Yes	Yes
Texas	Sugar Land	Yes	Yes	—
Texas	Sweeny	—	Yes	—
Texas	Tyler	Yes	Yes	Yes
Texas	University Park	—	Yes	Yes
Texas	Vernon	Yes	Yes	Yes
Texas	Victoria	Yes	Yes	Yes
Texas	Woodway	Yes	Yes	Yes
Texas	Yoakum	Yes	—	—
Virginia	Norfolk	—	Yes	Yes
Vermont	Burlington	—	Yes	Yes
Vermont	South Burlington	—	Yes	Yes
Vermont	Williston	—	Yes	Yes
Vermont	Winooski	—	Yes	Yes
Washington	Clark County	Yes	Yes	Yes
Washington	King County	Yes	Yes	Yes
Washington	Mason County	Yes	Yes	Yes
Washington	Pierce County	Yes	Yes	Yes
Washington	Tacoma	Yes	Yes	Yes
Wisconsin	Appleton	Yes	Yes	Yes
Wisconsin	Beaver Dam	Yes	Yes	Yes
Wisconsin	Beloit	Yes	Yes	Yes
Wisconsin	Big Bend	Yes	Yes	Yes
Wisconsin	Chippewa County	Yes	Yes	Yes
Wisconsin	Dane County	Yes	Yes	Yes
Wisconsin	De Pere	Yes	Yes	Yes
Wisconsin	Eau Claire	Yes	Yes	Yes
Wisconsin	Fennimore	Yes	Yes	Yes
Wisconsin	Fitchburg	Yes	Yes	Yes
Wisconsin	Fond du Lac	Yes	Yes	Yes
Wisconsin	Glendale	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
Wisconsin	Green Bay	Yes	Yes	Yes
Wisconsin	Hudson	Yes	Yes	Yes
Wisconsin	Kenosha	Yes	Yes	Yes
Wisconsin	Lake Delton Village	Yes	Yes	Yes
Wisconsin	Lincoln County	Yes	Yes	Yes
Wisconsin	Madison	Yes	Yes	Yes
Wisconsin	Marshfield	Yes	Yes	Yes
Wisconsin	Menomonie	Yes	—	—
Wisconsin	Merrill	Yes	Yes	Yes
Wisconsin	Middleton	Yes	Yes	Yes
Wisconsin	Milwaukee	Yes	Yes	Yes
Wisconsin	Monona	Yes	Yes	Yes
Wisconsin	Neenah	Yes	Yes	Yes
Wisconsin	North Hudson	Yes	Yes	Yes
Wisconsin	Oak Creek	Yes	Yes	Yes
Wisconsin	Oneida County	Yes	Yes	Yes
Wisconsin	Park Ridge	—	Yes	—
Wisconsin	Portage	Yes	Yes	Yes
Wisconsin	Prairie du Chien	Yes	Yes	Yes
Wisconsin	Reedsburg	Yes	Yes	Yes
Wisconsin	Rhinelander	Yes	Yes	Yes
Wisconsin	Shorewood	Yes	Yes	Yes
Wisconsin	Shorewood Hills	Yes	Yes	Yes
Wisconsin	Somerset	Yes	Yes	Yes
Wisconsin	South Milwaukee	Yes	Yes	Yes
Wisconsin	Stevens Point	Yes	—	—
Wisconsin	Suamico	Yes	Yes	Yes
Wisconsin	Verona	Yes	Yes	Yes
Wisconsin	Watertown	Yes	Yes	Yes
Wisconsin	West Allis	Yes	Yes	Yes
Wisconsin	Weston	Yes	Yes	Yes
Wisconsin	Winnebago County	Yes	Yes	Yes
Wisconsin	Wisconsin Dells	Yes	Yes	Yes
Wisconsin	Wisconsin Rapids	Yes	Yes	Yes
West Virginia	Barbour County	Yes	Yes	—
West Virginia	Berkeley County	Yes	Yes	—
West Virginia	Boone County	Yes	—	—
West Virginia	Braxton County	Yes	Yes	Yes
West Virginia	Brooke County	Yes	—	—
West Virginia	Cabell County	Yes	Yes	Yes

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
West Virginia	Calhoun County	Yes	Yes	Yes
West Virginia	Clay County	Yes	Yes	—
West Virginia	Doddridge County	Yes	Yes	Yes
West Virginia	Fayette County	Yes	Yes	—
West Virginia	Grant County	Yes	Yes	Yes
West Virginia	Greenbrier County	Yes	Yes	Yes
West Virginia	Hardy County	Yes	—	—
West Virginia	Harrison County	Yes	Yes	Yes
West Virginia	Jackson County	Yes	Yes	Yes
West Virginia	Jefferson County	Yes	—	—
West Virginia	Kanawha County	Yes	Yes	Yes
West Virginia	Lewis County	Yes	Yes	—
West Virginia	Lincoln County	Yes	Yes	Yes
West Virginia	Marion County	Yes	Yes	—
West Virginia	Marlinton	Yes	Yes	Yes
West Virginia	Marshall County	Yes	—	—
West Virginia	McDowell County	—	Yes	—
West Virginia	Mercer County	Yes	Yes	—
West Virginia	Mineral County	Yes	—	—
West Virginia	Mingo County	Yes	—	—
West Virginia	Monongalia County	Yes	Yes	Yes
West Virginia	Monroe County	Yes	Yes	—
West Virginia	Morgan County	Yes	Yes	—
West Virginia	Morgantown	Yes	Yes	Yes
West Virginia	Nicholas County	Yes	—	—
West Virginia	Ohio County	Yes	Yes	Yes
West Virginia	Pendleton County	Yes	Yes	Yes
West Virginia	Pleasants County	Yes	Yes	Yes
West Virginia	Pocahontas County	Yes	Yes	Yes
West Virginia	Preston County	Yes	—	—
West Virginia	Raleigh County	Yes	—	—
West Virginia	Randolph County	Yes	Yes	Yes
West Virginia	Ritchie County	Yes	Yes	Yes
West Virginia	Roane County	Yes	Yes	Yes
West Virginia	Summers County	Yes	Yes	Yes
West Virginia	Taylor County	Yes	Yes	Yes
West Virginia	Tucker County	Yes	Yes	Yes
West Virginia	Upshur County	Yes	Yes	Yes
West Virginia	Wayne County	Yes	—	—
West Virginia	Webster County	Yes	Yes	—

Appended Data Table for Figure 14.6 Continued

State	City or county	100% workplaces	100% restaurants	100% bars
West Virginia	Wirt County	Yes	Yes	Yes
West Virginia	Wood County	Yes	Yes	Yes
West Virginia	Wyoming County	Yes	Yes	Yes
Wyoming	Burlington	Yes	Yes	Yes
Wyoming	Casper	—	Yes	Yes
Wyoming	Cheyenne	—	Yes	Yes
Wyoming	Evanston	—	Yes	Yes
Wyoming	Laramie	—	Yes	Yes
Wyoming	Mountain View	Yes	Yes	Yes
Wyoming	Rock Springs	—	Yes	—

Alaska Anchorage Yes Yes Yes Alaska Barrow — Yes — Ala