



## Don't Forget Tobacco

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**A**t a time when all eyes are focused on health care reform, escalating medical costs, and childhood obesity, cigarette smoking remains by far the most common cause of preventable death and

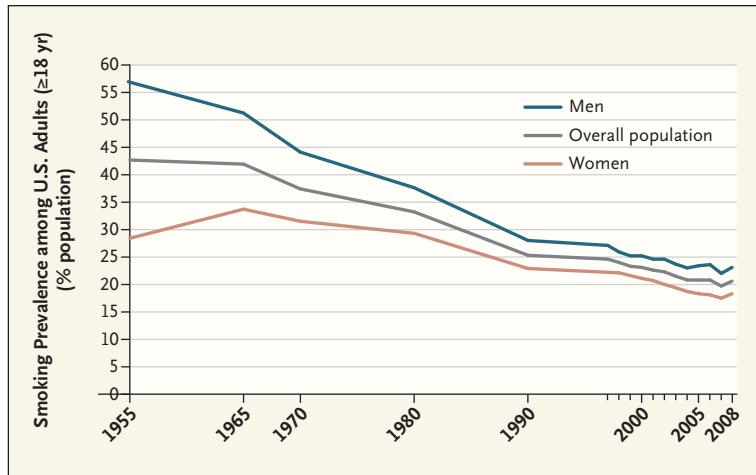
disability in the United States. Because important strides have been made in tobacco control, in terms of both interventions (tax hikes and laws creating smoke-free workplaces) and outcomes (smoking prevalence that has more than halved since the early 1960s [see graph]), it is tempting to believe that the battle is largely won and that we should move on to other pressing public health issues. But the prevalence of smoking in the United States hovers at 20%, more than 8 million people are sick or disabled as a result of tobacco use, and smoking kills 450,000 Americans annually. If no additional progress is made in reducing smoking-initiation rates and increasing cessation

rates, the prevalence of smoking in the United States will decline only to 16.7% by 2020 and will stabilize at 13.5% shortly after midcentury,<sup>1</sup> and millions of people will die prematurely. We need to understand the epidemiology of smoking, look at the current state of tobacco control, and determine what more can be done; then we need to do it.

Smoking today is concentrated disproportionately in lower socioeconomic classes. For example, the self-reported smoking rate is 1% among U.S. physicians but more than 30% in some blue-collar populations. Smokers are much more likely than nonsmokers to have chronic diseases such as diabetes, chronic obstructive pulmonary disease, and asth-

ma. People with chronic mental illness or substance-use disorders are particularly vulnerable: in addition to being more likely than other Americans to smoke, they smoke more cigarettes per day and have a harder time quitting.<sup>2</sup>

Thanks to restrictions on places in which people can smoke and increasing cigarette prices, smokers smoke fewer cigarettes per day than they used to. In 1990, 18% of smokers in California were "heavy" smokers (more than 25 cigarettes per day) and 45% were "light" or intermittent smokers (fewer than 15 cigarettes per day); by 2005, the proportions were 7% and 67%, respectively. Although smoking fewer cigarettes per day has some health benefit, many smokers compensate by smoking their remaining cigarettes more intensively. The main advantage of reduced daily consumption is that it makes quitting easier. Sadly, the national prevalence of smoking has



**Smoking Prevalence among U.S. Adults, 1955–2008.**

Data are from the Centers for Disease Control and Prevention.

barely budged in recent years: it was 20.8% in 2006, 19.8% in 2007, and 20.6% in 2008. Whether, as expected, the rates fell in 2009 as a result of the federal 62-cent-per-pack tax increase remains to be seen.

There is, however, strong evidence regarding ways of reducing tobacco use. Four policies have had documented success: raising tobacco taxes, extending laws regarding clean indoor air to additional sites, running countermarketing campaigns, and banning cigarette advertising and promotion.<sup>3</sup> Progress continues in the first two categories, which do not require an allocation of funds. The April 2009 federal tax increase was supplemented that year by tax increases in 14 states and the District of Columbia. State taxes now range from \$4.35 per pack in New York to just 17 cents in Missouri (see map). In Europe, taxes are often much higher; the taxes in Norway exceed \$11 per pack. Notably, little of our revenue from tobacco taxation is used for tobacco control.

Laws regarding clean indoor air are advancing nationwide. Al-

most two thirds of the population live in areas in which there are comprehensive smoke-free ordinances, and the proportion keeps increasing. These laws enjoy great popular support and are rarely repealed, but soon we'll reach the limit of our ability to make designated indoor areas smoke-free. However, smoke-free laws may be extended to new venues — automobiles in which children are present, apartments and condominiums, and public parks and beaches.

In contrast, interventions requiring funding have taken a beating. State tobacco-control programs have been emaciated. Few states can afford much counteradvertising beyond public service announcements. Many states have cut support of smoking-cessation programs, and funding for toll-free telephone quit lines has declined. The few private philanthropies that have supported tobacco-control policies have seen their assets dwindle or their priorities change. And there is little citizen advocacy for tobacco control: although more women die from lung cancer than from breast cancer, for

instance, there is no race for the cure or brown ribbon for lung cancer.

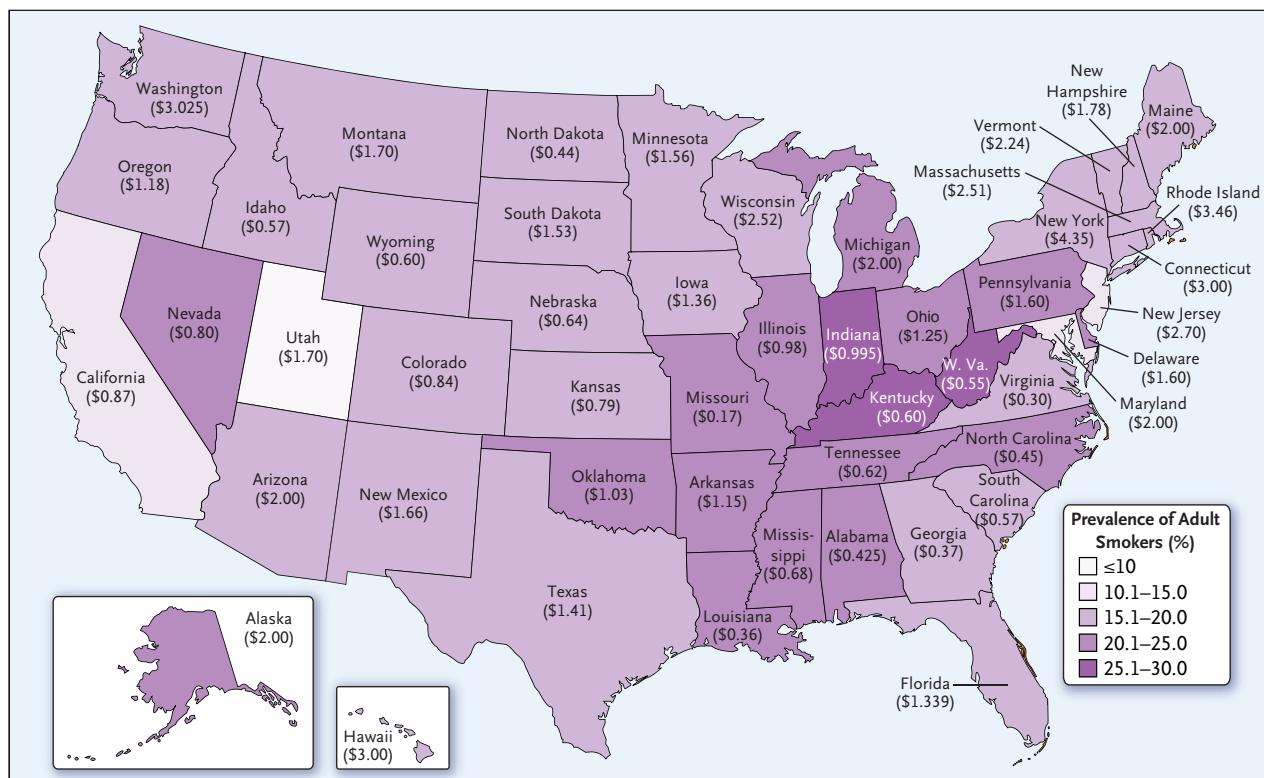
There is one positive development: the Food and Drug Administration (FDA) can now regulate tobacco products (within limits).<sup>4</sup> Already, it has promulgated restrictions on advertising near schools and banned the addition of most flavorings to cigarettes. The FDA has also prohibited the use of misleading terms such as “light” and “low tar” and is investigating the toxic effects of mentholated cigarettes with an eye toward a possible ban. Soon, the agency will probably require that cigarette packs carry large, vivid, graphic warning labels about smoking hazards.

Five other developments merit mention. The ability of smoking-cessation programs to stimulate population-wide cessation was shown after the passage of health care reform in Massachusetts, when smokers who were newly covered by health insurance took advantage of Medicaid coverage of cessation services.<sup>5</sup> Second, stigmatization of smoking continues, pressuring smokers to quit. Third, some attention is being paid to “third-hand smoke” — children’s exposure to toxic residues on furniture, clothing, and flooring. Fourth, a nicotine vaccine is being tested; if effective, it could offer a brief intervention resulting in lasting abstinence for some smokers. Other pharmaceutical innovations are awaited, including the development of a true pulmonary nicotine inhaler (the current inhaler delivers nicotine to the buccal cavity, whence it is absorbed into the bloodstream) — which raises the question of whether we’re ready for a prod-



An interactive map is available at [NEJM.org](http://NEJM.org)

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#### Prevalence of Smoking among Adults and Cigarette Excise-Tax Rates.

The map shows the prevalence of smoking among adults in the United States as of 2008 and the cigarette excise-tax rates across the United States as of July 1, 2010. Data on smoking prevalence are from the Behavioral Risk Factor Surveillance System (BRFSS) of the Centers for Disease Control and Prevention, the best source of state-specific prevalence estimates. However, the BRFSS national prevalence figure is systematically lower — more than 2 percentage points lower for 2008 — than the estimate from the National Health Interview Survey, which is considered the most reliable source of national data on smoking prevalence. Consequently, BRFSS estimates may understate smoking prevalence for many states. Juxtaposition of cigarette tax rates and smoking prevalence should not be interpreted as suggesting that the tax rate is the only determinant of smoking. Many factors influence prevalence, and prevalence may, in turn, also influence tax rates: higher taxes reduce the prevalence of smoking, but lower smoking prevalence within a state may reflect a stronger “anti-smoking” norm, making higher taxes more politically feasible. An interactive map is available at [NEJM.org](http://NEJM.org).

uct that might help many smokers to quit while sustaining addiction and possibly recruiting new users. Finally, the Obama administration has supported increased funding for tobacco control. The American Recovery and Reinvestment Act provides support to all states and 21 communities for tobacco-control programs, and the Patient Protection and Affordable Care Act includes public health funds and funds targeted for the prevention of disease that can be used for tobacco control (though these funds probably won't compensate for the

loss of state funding). Furthermore, Health and Human Services Secretary Kathleen Sebelius recently announced a comprehensive tobacco-control initiative.

Renewing and accelerating the decline in smoking prevalence requires many synergistic activities. These should include continued tax increases and expansion of laws regarding clean indoor air, which have not yet reached saturation levels. Countermarketing efforts should be revived and fully funded. Polls show that there is public support for earmarking a portion of

tobacco taxes for tobacco-control programs targeted to young people, but politicians must be aware of that support or they will continue using the funds for other purposes. Smoking-cessation activities must be intensified, with particular focus on the most vulnerable populations — the mentally ill, substance abusers, prisoners, and the poor. Toll-free telephone quit lines are effective, yet few smokers and clinicians are aware of them; they require greater marketing and support. Moving smoking out of movies that are seen by

young people would make the behavior less seductive. Identifying and supporting smoking-cessation champions in clinician groups would boost clinicians' involvement in cessation, as would tapping peer groups and social networks that interact with smokers. We also need more research into ways of helping certain groups of smokers to quit — including young people, light and intermittent smokers, and those with mental or substance-use disorders.

More radical solutions, such as requiring the tapering of nicotine content in tobacco products down to nonaddicting levels or banning sales outright, have been proposed. Could the threat of

such solutions inspire increased emphasis on conventional solutions? Are they worth consideration in their own right?

Lack of insurance, childhood obesity, and tobacco use are very different public health challenges, requiring different solutions. But all three threaten the most vulnerable Americans. By assuming that the tobacco war has been won, we risk consigning millions of Americans to premature death.

Disclosure forms provided by the authors are available with the full text of this article at NEJM.org.

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## The Havasupai Indian Tribe Case — Lessons for Research Involving Stored Biologic Samples

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On April 20, 2010, Arizona State University (ASU) agreed to pay \$700,000 to 41 members of the Havasupai Indian tribe to settle legal claims that university researchers improperly used tribe members' blood samples in genetic research.<sup>1</sup> The settlement closes a difficult chapter for both parties but leaves open a bedeviling question for genetic research: What constitutes adequate informed consent for biospecimens collected for research to be stored and used in future, possibly unrelated studies? The case illuminates the clashing values that have driven debate in this area and the importance of understanding the study population's perspectives.

The Havasupai suit stemmed

from a 1990 diabetes study in which ASU researchers collected more than 200 blood samples from tribe members. The consent form described the project as studying "the causes of behavioral/medical disorders," but pre-study communications with tribal leaders apparently focused on diabetes. The researchers used the samples in multiple studies unrelated to diabetes, sharing them with other investigators. Tribe members particularly objected to three uses: a study evaluating the genetic basis of schizophrenia, which could stigmatize the tribe; one examining inbreeding, which raised stigmatization issues and concern related to a cultural belief that inbreeding brings harm to one's

family; and evolutionary-genetics studies suggesting that contrary to the tribe's origin story, its ancestors migrated across the Bering Sea.

In 2004, tribe members filed a \$50 million lawsuit alleging, among other things, fraud, breach of fiduciary duty, negligence, and trespass.<sup>2</sup> The core legal question was whether the downstream uses of the samples fell within the scope of the donors' informed consent. The Havasupai faced an uphill battle, since other plaintiffs who have asserted their rights to control the use of research specimens have generally been unsuccessful.<sup>3</sup>

However, after several years of legal wrangling, ASU agreed to settle. In addition to providing