

Anatomy of Public Health Research: Tobacco Control as a Case Study

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Tobacco-control programs are based on the noblest of intentions.

Tobacco is unhealthy, and apparently it is not hard to convince people that government programs are somehow not only effective but necessary to reduce smoking. Early efforts were successful because they focused on raising prices through tax hikes. Then smoking bans became the focus. Bans have so far been imposed on restaurants and bars in 27 states and Washington, D.C., and it is argued that they will change social norms in ways that lower smoking.

Spending programs represent a more recent strategy, and these are the focus of this commentary. State governments fund anti-smoking advertisements that run in newspapers and magazines, and on television; visits to schools to educate children; cessation interventions (intensive counseling services and cessation medications); grants for researchers to demonstrate effectiveness of tobacco-control programs; and many other activities. These programs hire many people, are very expensive, and thereby create many tobacco-control advocates.

The federal Centers for Disease Control and Prevention (CDC) is so confident about program effectiveness that it provides each state with its own “best practice” spending target.¹ Annual ranges of \$15 to \$20 per capita are set for each state. All states together spent \$5.3 billion over the period 2000–2007, or \$18 on a per-capita basis. But CDC warns that states should have spent at least \$8 billion more, for a total of \$13.3 billion to meet minimum recommended levels of funding. (All amounts are in 2005 dollars.)

CDC argues that meeting these targets over 5 years would lead to 5 million fewer smokers, and thus would prevent hundreds of thousands of tobacco-related deaths.¹ This outcome would dramatically improve public health. However, these claims are inconsistent with evidence from these programs, and from studies showing that greater government intervention brings no improvement, or even leads to deterioration in public health.^{2,3} Unfortunately, CDC’s “if we spend it, they will quit smoking” mentality wastes tax dollars and is a recipe for growing government.

Taxes, Bans, Smoking Rates, and Health

Government intervention in public health creates harm in many ways that should not be ignored. Tax hikes on cigarettes harm smokers when they switch to higher tar and nicotine brands as they smoke less.^{4,5} Such switching is more detrimental to health as indicated by epidemiologic research.⁶ Decreases in sales are also overestimated, since tax hikes encourage shopping in lower-tax jurisdictions. Moreover, declines in smoking caused by tax hikes are overstated because high-tax states have fewer smokers to begin with and would exhibit fewer sales with or without higher taxes.⁷ Tax hikes may follow rather than lead reductions in smoking; simple correlation between taxes and sales does not prove causation. Finally, recent tax hikes appear to be more about raising tax revenues than improving public health.

Bans also tend to follow rather than lead reductions in smoking.⁸ Both tax hikes and bans are first passed in locations with relatively few smokers and high anti-smoker sentiment. Locations with bans

would have less smoking than those without bans, with or without the restrictive laws. While evidence on whether bans lower smoking remains mixed,^{9,10} their overall effect on public health is undetermined, owing to unintended consequences.

Real Evidence on Tobacco-Control Spending

Many studies of tobacco-control spending use faulty statistical methodology because they fail to control for other factors that might influence smoking.^{11–17} These include, for example, smuggling, income changes, higher taxes, and greater health concerns. It is careless to attribute all declines in smoking to government interventions, although this is exactly what these studies assume. Thus, such studies cannot demonstrate effectiveness of government spending.

CDC also focuses on research in two states—California and Massachusetts—when formulating spending recommendations. These two states are considered model programs because they have the longest funding histories. Even if effective, their success is unlikely to be exported to other states because these two states exhibit such strong anti-smoker sentiment. Both were early adopters of tax hikes, expensive spending programs, and bans, demonstrating again that programs follow rather than lead smoking reduction.

CDC then ignores studies showing little to no impact from programs, basing spending recommendations on only one side of an unsettled literature. Frequently cited studies examine the late 1980s of the California program,^{18,19} and programs from 1981–2000 in all 50 states.^{20,21} These studies are dated and examine many years in which most states did not fund programs. CDC began publishing spending data in 2000 because most states did not fund programs until after the Master Settlement Agreement in 1998.

The CDC ignores more recent studies indicating that spending programs are ineffective. Various refereed studies conclude that spending is unrelated to cigarette sales across the 50 states in years following 2000.^{22–24} Spending has also been shown to be unrelated to prevalence and intensity of cigarette use among college students.²⁵ California’s spending program from 1989–2002 has been found to exert a trivial effect on cigarette sales.²⁶ This study found that, for every \$1 increase in per capita spending, the sales gap between California and the United States widens by only two to four cigarettes per capita on an annual basis. Spending has also been shown to be unrelated to smoking prevalence across the 50 states over the period 2001–2005.²⁷

Finally, CDC offers no empirical verification that implementing recommended spending targets causes less smoking. CDC simply extrapolates results from studies it chooses to believe when making recommendations. However, a recent study shows that states that met or exceeded targets exhibited trivial differences compared to states that failed to meet targets.²⁴ Recommended spending expansion was estimated to lower smoking by far less than one pack per capita over an entire year.

Why Does Spending Not Improve Public Health?

Tobacco-control advocates claim spending is necessary to combat all the tobacco industry’s advertising. As a former director of

the CDC's Office on Smoking and Health recently put it, past media campaigns were effective when they informed us that "smoking really provided none of the attributes seen in the cigarette advertisements, but was in fact an expensive, dirty, smelly habit, and that the cigarette companies were simply lying to them to increase their profits."²⁸ This claim, however, is based on the false premise that the goal of advertising is gaining new customers, when it is really about convincing smokers to switch brands. A recent study concludes that media campaigns attacking the tobacco industry do not significantly lower smoking intention.²⁹ Thus, spending is ineffective and wasted on combating a message that advertisers are not sending. Moreover, repeating that smoking is unhealthy won't discourage much smoking because people already understand this fact.

Even if spending somehow lowers smoking by some individuals, it also harms others. Repeating the message that nicotine is habit-forming convinces some smokers that their habit is not their fault and that they would be silly to attempt to quit on their own. Removing personal responsibility for unhealthy habits is likely to lessen smokers' resolve to quit. Tobacco-control advocates appear more than happy to take over health decisions because they believe that individuals cannot make wise decisions. A government takeover of health decisions is not, however, a good substitute for personal responsibility.

Studies cited by CDC as showing effectiveness are funded by tobacco-control programs, thus raising suspicions that conclusions are formulated prior to research. CDC includes funding for studies "demonstrating effectiveness" of programs when they define spending targets.¹ Apparently CDC is assuming the outcome before conducting the research. Rather than testing a hypothesis, it evidently intends to justify spending. The amount used to fund studies is not known, but it appears sizable.

Government-Funded Public Health Research

Tobacco control provides a straightforward case study of how governments fund public health research, and promote spending on their own programs. First, a particular public health problem is chosen, such as smoking, obesity, trans fats, lack of exercise, lack of free pre-school, fast-food eating, alcoholism, etc. Next, government only funds studies that demonstrate that programs effectively mitigate problems. Studies that contradict or even question these claims are ignored. Spending targets are then chosen based on self-funded studies. Finally, failure to meet the target ("chronic underfunding") is assumed to prolong the problem. Meanwhile, many dollars are wasted, government grows, and, in some cases, public health worsens.

Winners from this strategy are obvious: those who work in the programs, either directly or by receiving funds to conduct research demonstrating that programs are effective and underfunded. Others include those in the media outlets—print, video and radio—who educate the public about something they already know: smoking is unhealthy. Predictably, these winners are not timid about repeating CDC claims of underfunding.

Clear similarities exist between government-funded research on tobacco-control spending and economic and epidemiological research on smoking bans.^{30,31}

Government consistently funds only that public-health research that favors government solutions.

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REFERENCES

- Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs—2007*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; October 2007.
- Berger MC, Messer J. Public financing of health expenditures, insurance and health outcomes. *Applied Economics* 2002;34:2105-2113.
- Self S, Grabowski R. How effective is public health expenditure in improving overall health? A cross-country analysis. *Applied Economics* 2003;35:835-845.
- Farrelly MC, Nimsch CT, Hyland A, et al. The effects of higher cigarette prices on tar and nicotine consumption in a cohort of adult smokers. *Health Econ* 2004;13:49-58.
- Adda J, Cornaglia F. Taxes, cigarette consumption, and smoking intensity. *Am Economic Rev* 2006;96:1013-1028.
- Thun MJ, Lally CA, Flannery JT, et al. Cigarette smoking and changes in the histopathology of lung cancer. *J Natl Cancer Inst* 1997;89:1580-1586.
- Keeler TE, Hu T, Manning WG, et al. State tobacco taxation, education and smoking: controlling for the effects of omitted variables. *Nat Tax J* 2001;54:83-102.
- Dunham J, Marlow ML. Smoking laws and the allocation of restaurant and bar seating. *Economic Inquiry* 2000;38:151-157.
- Buddelmeyer H, Wilkins R. The effects of smoking ban regulations on individual smoking rates. *University of Melbourne: Discussion Paper No. 1737*; 2005.
- Adams S, Cotti C. Drunk driving after the passage of smoking bans in bars. *J Public Economics* 2008 92:1288-1305.
- Manley MW, Pierce JP, Gilpin EA, et al. Impact of the American stop intervention study on cigarette consumption. *Tob Control* 1997;6(Suppl 2):S12-S16.
- Pierce JP, Gilpin EA, Emery SL, et al. Has the California tobacco control program reduced smoking? *JAMA* 1998;280:893-899.
- Biener L, Harris JE, Hamilton W. Impact of the Massachusetts tobacco control programme: population based trend analysis. *BMJ* 2000;321:351-354.
- Robbins HM, Krakow M, Warner D. Adult smoking intervention programmes in Massachusetts: a comprehensive approach with promising results. *Tob Control* 2002;11(Suppl 2):ii4-ii7.
- Soldz S, Clark TW, Stewart E, et al. Decreased youth tobacco use in Massachusetts 1996-1999: evidence of tobacco control effectiveness. *Tob Control* 2002;11(Suppl 2):ii14-ii19.
- Weintraub JM, Hamilton WL. Trends in prevalence of current smoking, Massachusetts and states without tobacco control programmes, 1990-1999. *Tob Control* 2002;11(Suppl 2):ii8-ii13.
- Ko HK, Judge CM, Robbins H, et al. The first decade of the Massachusetts tobacco control program. *Public Health Rep* 2005;120:482-495.
- Hu T, Sung H, Keeler TE. The state antismoking campaign and the industry response: the effects of advertising on cigarette consumption in California. *Am Economic Rev* 1995; 85:85-90.
- Hu T, Sung H, Keeler TE. Reducing cigarette consumption in California: tobacco taxes vs. an anti-smoking media campaign. *Am J Public Health* 1995;85:1218-1222.
- Farrelly, MC, Pechacek TF, Chaloupka FJ. The impact of tobacco control program expenditures on aggregate cigarette sales: 1981-2000. *J Health Econ* 22, 843-859, 2003.
- Tauras JA, Chaloupka FJ, Farrelly MC, et al. State tobacco control spending and youth smoking. *Am J Public Health* 2005;95:338-344.
- Marlow ML. Tobacco control programs and tobacco consumption. *Cato J* 2006;26:573-591.
- Goel RK. Smoking prevalence in the United States: differences across socioeconomic groups. *J Econ Finan* 2008;32:195-205.
- Marlow ML. Is the CDC blowing smoke? *Regulation* 2009;32:46-52.
- Ciecierski CC, Chatterji P, Chaloupka FJ, et al. Do state expenditures on tobacco control programs decrease use of tobacco products among college students? *NBER Working Paper No. 12532*; 2006.
- Marlow ML. Do tobacco-control programs lower tobacco consumption? Evidence from California. *Public Finan Rev* 2007;35:689-709.
- Marlow ML. Do expenditures on tobacco control decrease smoking prevalence? *Applied Economics*, preprint release, Jun 19, 2008.
- Eriksen M. YES: programs needed to combat billions spent by tobacco companies. *Atlanta J Constitution*, Jul 21, 2009.
- Pechmann C, Reibling ET. Antismoking advertisements for youths: an independent evaluation of health, counter-industry, and industry approaches. *Am J Public Health* 2006;96: 906-913.
- Marlow ML. Honestly, who else would fund such research? Reflections of a non-smoking scholar. *Econ Journal Watch* 2008;5:240-268.
- Marlow ML. Epidemiologic and economic research, and the question of smoking bans. *J Am Phys Surg* 2009;14:58-60.