Epidemiologic and Economic Research, and the Question of Smoking Bans

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ABSTRACT

Smoking bans in public places are promoted on the dual basis that they protect the public from "secondhand smoke"—environmental tobacco smoke (ETS), and that bans never harm businesses. Evidence shows that ETS does not pose health risks nearly as large as many ban advocates claim, and that bans do harm some businesses. Unintended and adverse consequences of smoking bans include (1) harm to smokers if they compensate by smoking more intensely; (2) an increase in drunk driving when smokers drive longer distances to smoke and drink; and (3) less innovation in air-filtration technology that also slows progress in removing hazards other than tobacco smoke.

The Rationale for Bans

Public health advocates claim that smoking bans in public places are necessary to protect the public from environmental tobacco smoke (ETS), often called "secondhand smoke." Advocates also assert that communities can mandate bans without fear that they harm any business owners. Advocates go so far as to claim that bans often raise profits and so, in effect, owners should thank advocates for increasing their wealth. There are two widely cited literature reviews that concern economic impacts.

The first claims that all of the studies that found a negative impact were supported by the tobacco industry. While 94 percent of the tobacco industry-supported studies reported a negative economic impact, none of the non-industry supported studies had this result. "All of the best-designed studies report no impact or a positive impact of smoke-free restaurant and bar laws on sales or employment," the authors state. "Therefore, policymakers can act to protect workers and patrons from the toxins in secondhand smoke confident in rejecting industry claims that there will be an adverse economic impact."[1]

The second article states that it "reviews the spread of clean indoor air laws, the effect on public health, and the scientific evidence of the economic impact of clean indoor air laws." It finds that the "vast majority of scientific evidence" shows no negative economic impact of clean indoor air policies, with "many studies finding that there may be some positive effects on local businesses,… despite the fact that tobacco industry-sponsored research has attempted to create fears to the contrary." The article recognizes the importance of documenting economic impact, especially within the hospitality industry, for "further progress in the diffusion of clean indoor air laws."[2]

The strategy of presenting evidence in two disciplines—epidemiology and economics—is used to promote smoking bans. To gain support of the nonsmoking public, the risk of ETS, while it may exist, is overstated. To overcome resistance of business owners, it is repeatedly asserted that bans never harm business, although neither theory nor evidence supports this claim.

Epidemiologic Research on ETS

Research on ETS does not fully support claims that it poses significant health risk. A recent review of the many studies of risks associated with ETS exposure concludes that "reported studies do not offer consistent results, and overall cannot be interpreted for or against risk."[3] Of the 75 published studies of ETS and lung cancer, 70 percent did not report statistically significant differences of risk, 17 percent claim an increased risk, and 13 percent imply a reduction of risk.

Michael Siegel summarizes the epidemiologic evidence in the following way:

> While there is ample evidence that chronic exposure to secondhand smoke increases the risk of cardiovascular disease, and therefore heart attack risk, and there is some suggestive evidence that acute exposure to secondhand smoke may present some danger of risk to individuals with existing severe coronary artery disease, there appears to be no scientific basis for claims that brief, acute, transient exposure to secondhand smoke increases heart attack risk in individuals without coronary disease, that it increases such risk to the level observed in smokers, that it can cause atherosclerosis, that it can cause fatal or catastrophic cardiac arrhythmias, or that it represents any other significant acute cardiovascular health hazard in nonsmokers.[4]

Roger Jenkins, noted researcher on composition and measurement of ETS smoke, concludes that the typical smoker inhales 480 milligrams of smoke, and 32 milligrams of nicotine per day.[5] In a home where smoking is unrestricted, the typical nonsmoker will inhale the equivalent of 0.45 milligrams of smoke particles and 0.028 milligrams of nicotine. Jenkins also estimates that the average nonsmoking woman's exposure to ETS from living with a smoker would be equivalent to 8 to 10 cigarettes' worth of nicotine and particles over the course of a year.[6]

The harm from ETS is frequently overstated. In 2006, for example, the Action on Smoking and Health (ASH) claimed: "Breathing drifting tobacco smoke for as little as 30 minutes (less than the time one might be exposed sitting on a park bench) can raise a non-smoker's risk of a fatal heart attack to that of a smoker."[7] Siegel has counted at least 65 groups making similar claims, including the American Cancer Society and the UK National Health Service.[7]

Epidemiologist Carl V. Phillips summarizes the case for smoking bans, based on evidence regarding public health:

> There is little doubt that inhaling smoke is unhealthy, but equally clear evidence shows that we can only demonstrate disease risk from ETS for those at the highest level of exposure. The evidence about health effects of smoke and the legitimate aesthetic objection to involuntary ETS exposure are quite sufficient to justify prohibiting indoor smoking in public places, though clearly insufficient to justify public policies that prohibit voluntary low-level ETS gain.[8]

This view suggests that the intense dislike of nonsmokers for cigarette smoke, and its unhealthy nature provide ample reason to ban smoking when nonsmokers cannot easily avoid it. When easily avoidable, there are no compelling reasons why voluntary exposure would need to be made illegal. It remains puzzling then why ban advocates appear to exaggerate epidemiologic evidence when so many citizens would support banning smoking in many, but not all public places on the basis of aesthetics or accurate risk estimates. Perhaps they are less concerned with protecting nonsmokers than with eliminating tobacco use everywhere.

Economic Research on Smoking Bans

Smoking is commonly viewed as a case of smokers imposing negative externalities on nonsmokers, and therefore of failure of private markets to allocate resources efficiently. This viewpoint singles out smokers as the sole source of the externality, thus leading to the conventional solution that smoking should simply be banned.

The conventional view misses much when it singles out smokers as the sole source of the problem. Ronald Coase (1960) introduced the notion of "reciprocal nature of externalities" whereby both parties—smokers and nonsmokers in this case—believe the other is the source of the problem.[9] Smokers do not like nonsmokers complaining about their smoking, and nonsmokers do not like smoke. This key insight is critical to understanding that opposing parties have incentives to negotiate with each other over disputes. Coase argued that, in absence of transaction costs, negotiation achieves an efficient solution as long as resources are privately owned and transferable. Those who value the airspace the most will bid the most for the right to enjoy the airspace as they wish.

Ban advocates argue that transaction costs are too prohibitive. But this is untrue in the hospitality industry because neither party owns the air space. Business owners own it, and have financial incentives to allocate it efficiently by mediating between smokers and nonsmokers. Owners seeking to satisfy highest-valued users may forbid smoking, offer smoking/nonsmoking sections, or improve air-filtration systems and ventilation. A range of solutions will therefore emerge.

The variety of private solutions has been demonstrated in five peer-reviewed articles.[10-14] This research demonstrates that owners offer more nonsmoking seating and better ventilation when serving fewer smoking customers. Some owners voluntarily ban all smoking, but others allow smoking throughout, or dedicate areas where smoking is not allowed. Thus it is incorrect to argue that owners never attempt to resolve smoking disputes. Moreover, it is predictable that bans exert different effects on different businesses, because customer bases differ: some owners will gain, others will lose, and still others will be unaffected. It makes little sense to assert that bans never harm, as is often claimed.

My research with Boyes and Dunham finds that owners with more smoking customers predict losses more often than those with few smoking customers. Owners are also shown to adjust prices, wages, hours of operation, and other business attributes in response to bans; thus, bans affect customers and workers. Moreover, bans are mostly adopted in communities with fewer smokers, so jurisdictions that ban smoking experience less harm than would occur if bans were forced on communities with more smokers. Recent evidence of the effects of bans in Scotland,[15] the UK,[16] and India[17] reach similar conclusions.

Why, then, do so many studies show no harm? Most studies use a "community effects" methodology that aggregates all businesses within a community into one number and then examines whether this number changes following a ban. Studies routinely conclude that sales and tax aggregates never fall. This research method is like looking at a classroom of 30 students, observing that average weight is initially 150 pounds, and concluding that no changes occurred over the following 10 years because average weight remained 150 pounds. Meanwhile, some students gained 20 pounds, some lost 10 pounds, and still others weigh the same as before. This misleading method is routinely employed in studies concluding that bans harm no businesses.

Ban advocates dismiss contrary research as biased, especially when funded by the tobacco industry. They do not acknowledge, however, that the majority of studies concluding that there is no harm are funded by groups with vested interests in finding this result, such as the Roswell Park Cancer Institute, the National Cancer Institute, the Robert Wood Johnson Foundation, and pharmaceutical manufacturers selling nicotine-replacement therapies.[18]

Unfortunate and Unintended Consequences

The strategy of distorting the evidence to serve an agenda has adverse consequences.

Smokers compensate in various ways when they are subjected to tax hikes. They buy more cigarettes with higher tar and nicotine yields.[19,20] They may alter the intensity of smoking, defined as the ratio of nicotine concentration to the number of cigarettes smoked.[21] Epidemiologic research shows that more intense smoking is more detrimental to health.[22] Since bans, in effect, impose a tax rate of infinity on consuming in banned locations, bans adversely affect health when smokers compensate by smoking more intensely than prior to bans.

Overstating risk confuses the public about relative risks. Fomenting worry about ETS increases the probability of enactment of bans, and also promotes more funding for ETS research. Ban advocates thus shift focus away from behavior—such as lack of exercise, bad diets, or drunk driving—that might pose substantially greater health risks. Funds spent on ETS are diverted from research that might be more productive. Thus, decreasing the already small risk of ETS translates into increasing total health risks.

Paradoxically, bans may actually increase smoking. A study of bans in Australia finds that they do not significantly reduce smoking for most individuals.[23] But they may cause a significant "rebellion" effect among 18 to 24-year-old smokers, who became more likely to continue smoking following bans. A "James Dean" effect on youth may therefore exist, whereby bans make it easier to display "antisocial" behavior through smoking.

An increase in fatal car crashes involving drunken drivers has been reported after smoking bans are imposed in bars.[24] Such evidence is consistent with the explanation that bans cause smokers to drive longer distances to get to bars in another jurisdiction where they may continue to smoke.

Ironically, smoking bans may impede efforts to improve air quality. Several leading advocates are alarmed that improved ventilation could undermine passage of bans.[25] Better ventilation and air filtration could remove both ETS and other irritants and toxins, such as wood smoke, cooking oil, and insecticides. But, because of the singular focus on tobacco smoke, incentives for technologies that improve overall air quality surely decrease following bans.

Overstatement fosters suspicion that epidemiologic research and economic research are fast becoming junk science. Overzealous advocacy for smoking bans serves to discredit fields of research that can improve our lives in many ways. Phillips writes:

> The activists involved, many of whom hold titles that indicate that they should behave as scientists and academics, appear unconcerned about subverting science to further their worldly agendas, hurting the careers of honest scientists, driving students away from politically controversial fields, attacking the principles of free academic research, and threatening the reputation of epidemiology as a field.[8]

Conclusions

To achieve a political goal, advocates of smoking bans may exaggerate the risk of ETS and deny evidence of economic harm to some businesses. Distorted presentation of epidemiologic and economic evidence has the adverse effect of increasing total health risk, and of undermining the integrity of science.

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