

*Taxes on sugary beverages would do little to lower obesity.*

# Would Soda Taxes Really Yield Health Benefits?

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**R**oughly one-third of U.S. adults are classified as obese, which is defined as having a body mass index of 30 or higher. Obesity rates for most all age and gender groups exceed 30 percent, with men aged 20 to 39 years being the lone exception. Obesity is especially prevalent among minorities; African-Americans have a 51 percent higher prevalence of obesity, and Hispanics have 21 percent higher obesity prevalence than whites.

Obesity has become a major public health concern, given its association with chronic conditions that include diabetes, hypertension, high cholesterol, stroke, heart disease, certain cancers, and arthritis. Excess mortality stemming primarily from cardiovascular disease and diabetes is also believed to be associated with higher grades of obesity. Researchers at the Centers for Disease Control and Prevention in Atlanta estimate that obesity now accounts for 9.1 percent of all medical spending — \$147 billion in 2008.

Various factors are believed to promote rising obesity rates, but the hypothesized relationship between “nutritively sweetened beverages” (NSBs) and obesity has increasingly become the focus of attention. Some public health advocates call for Pigouvian taxes (see “Much Ado about Pigou,” Spring 2010) on these beverages, often referred to as “soda taxes,” as effective interventions that will lower obesity as well as generate tax revenues that can be used to fund public programs aimed at lowering obesity.

In this article, we discuss the economic theory and empirical evidence of using soda taxes to lower obesity. We conclude that these taxes are unlikely to significantly lower obesity, and that they promote many unintended consequences that may adversely affect public health. Higher tax revenues stemming from soda taxes are also likely to be used to expand govern-

ment programs other than those associated with controlling obesity, much as cigarette tax revenue now does.

## FLAWS IN THE ECONOMIC CASE FOR SODA TAXES

Proponents of soda taxes argue for government intervention because, they say, free markets fail to allocate resources in soda markets efficiently, with the ultimate consequence being too many obese people. Three assumptions underlie their argument:

- Soda causes obesity.
- Consumers lack adequate information and beverage choices.
- Soda drinkers impose external costs on others who pick up some portion of obese people’s higher medical costs.

Let us consider each of these assumptions.

**Soda causes obesity?** The correlation between soda consumption and obesity rates does not imply that soda consumption causes obesity. Other possibilities include obesity causes soda consumption, no relationship exists between soda consumption and obesity, and soda consumption and obesity are interdependent. Moreover, even if soda consumption did cause obesity, there is no reason to believe that soda is the lone causal factor behind obesity; other likely candidates include lack of exercise, age, genetics, consumption of other high-calorie foods and beverages, and many other factors.

Tax advocates claim that soda consumption causes obesity, but evidence demonstrating this casual link is weak at best. A 2006 review article by Vasanti Malik et al. of the relationship between the consumption of sugar-sweetened beverages and obesity found 16 studies indicating a significant positive relationship between consumption and body mass index, 10 studies that did not find a significant positive relationship, and four studies with mixed results. A 2007 literature

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review by Lenny Vartanian et al. found eight studies with a significant positive relationship, 15 studies with no significant positive relationship, and two studies with mixed results.

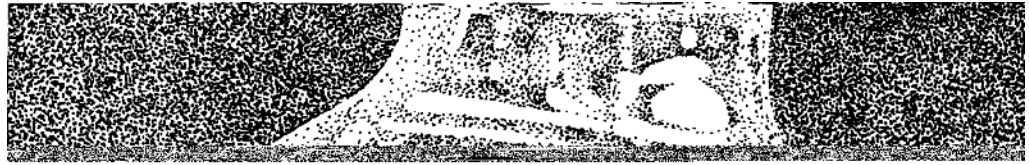
Although the authors of these surveys conclude that the evidence supports the view that soda consumption causes obesity, we suggest the evidence remains less than clear. Most articles in their surveys demonstrate correlation and not causation, and ignore confounding factors such as age, exercise, genetics, and other factors that probably affect body weight. The Malik survey acknowledges this point:

Overall, results from our review support a link between the consumption of sugar-sweetened beverages and the risks of overweight and obesity. However, interpretation of the published studies is complicated by several method-related issues, including small sample size, short duration of follow-up, lack of repeated measures of dietary exposures and outcomes, and confounding by other diet and lifestyle factors.

A recent commentary by David Allison and Richard Mattes in *JAMA: The Journal of the American Medical Association* acknowledges this same point:

Given current evidence, little can be concluded with confidence beyond the fact that requiring individuals to drink large amounts of NSBs causes greater weight gain than not doing so. Randomized controlled trials of NSB consumption reduction have been applied effectiveness studies rather than rigorously controlled efficacy studies. Only the latter ensures fidelity of the intervention.

The authors conclude that much of the research and subsequent news reports surrounding the issue have been extensively influenced by multiple biases that have eroded the reporting of objective science on this important public health matter.



**Unempowered consumers?** Some soda tax advocates claim that consumers drink too much soda as a result of inadequate access to healthier food and beverage choices. But there are roughly 40,000 food products in the typical U.S. supermarket. It is difficult to argue that this array of products somehow ignores consumer preferences, especially given competitive pressures and technological advances in processing, storage, transportation, and communication.

The growing variety of food products reflects an industry that adapts to consumer preferences regarding health-relat-

ed choices. Between 1987 and 2004, 35,272 new food products labeled “low fat” or “no fat” were introduced into the U.S. food market. That led researchers at the U.S. Department of Agriculture to conclude that unhealthy food consumption patterns do not stem from a market failure to supply healthy food and beverage choices.

While regular soda accounts for roughly 70 percent of U.S. soda sales, diet soda sales have been growing rapidly. Some forecasters predict that diet sales will eventually overtake regular soda. It thus seems that an active private market exists in providing “healthy” choices to consumers, which suggest that there is little need for government intervention into soda markets.

**Externalities?** Soda tax advocates argue that negative externalities — external costs not fully accounted for in markets — indicate a market failure in which too much soda is consumed. Externalities are argued to exist because consumers who become obese will not fully pick up the higher medical costs associated with their obesity. Taxes equal to these external costs would theoretically raise soda prices to levels consistent with efficient consumption levels.

However, it is unlikely that taxes could ever correct for any externality associated with obesity. The problem with the externality argument is that, even if obesity raises health care costs of the obese, this externality should be corrected by having health insurers impose surcharges on obese insureds that reflect the additional costs. Few criticize surcharges imposed by auto insurance firms on drivers with drunk driving records, so why not correct for higher costs associated with obesity through insurance premiums?

Unfortunately, federal health care legislation passed earlier this year severely reduces or eliminates differential health insurance pricing. The legislation requires insurance companies to provide coverage for preventive health services, which include obesity screening and nutritional counseling. The legislation does not require obese people to pay more for insurance, but provisions could possibly allow insurers to charge premiums to people with “lifestyle risk factors” such as tobacco use. It remains doubtful that obesity will be considered a lifestyle risk, however, given the legislation’s focus on obesity screening and nutritional counseling. Moreover, expected eliminations of pre-existing exclusion clauses that previously allowed insurers to deny coverage to obese individuals and those with past bariatric surgery would reinforce the view that obesity is not a lifestyle risk factor that should be reflected in higher insurance premiums.

Still, it remains unclear that soda consumption causes obesity, or that it is the sole causal factor behind obesity. And even if it is, the sensible policy would be to alter health insurance premiums to allow for obesity risk premiums, not a Pigouvian tax on soda. Such reform would not rely on the false premise that soda consumption is the lone causal factor behind obesity, as such a risk premium would “tax” body weight, which is the essential problem that soda tax advocates claim they are interested in controlling. Yet we are not aware

of any soda tax advocate who also supports adjusting health insurance premiums.

Finally, even if obesity shortens lives, economic theory indicates that obesity reflects a positive externality rather than a negative one. That is, external benefits associated with obesity are not fully accounted for in markets since obese individuals collect less from Medicare and Social Security over their shorter lifetimes. Kip Viscusi has estimated that smokers “save” taxpayers roughly 23¢–32¢ for each pack of cigarettes they smoke because of reduced social insurance costs — in addition to excise taxes already levied on cigarettes. A recent paper by K. McPherson analyzing United Kingdom data found that, although annual health care costs are highest for obese people earlier in life (until age 56 years), and are highest for smokers at older ages, the ultimate lifetime costs are highest for the healthy (nonsmoking, non-obese) people. McPherson finds that life expectancy from age 20 is reduced by five years for obese people and seven for smokers. The consequence is that healthy people live to incur greater medical expenditure on average, more than compensating for the earlier excess costs related to obesity or smoking.

Non-obese individuals thus receive external benefits in the form of additional public resources. If we were to follow soda tax advocates’ thinking, then we should in fact subsidize soda consumption so as to encourage it. Despite tax advocates’ fondness for taxing negative externalities, they never seem as anxious to correct positive externalities.

#### PIGOUVIAN TAXES IN PRACTICE

Even if tax advocates are correct about soda consumption causing so many problems, it is unlikely that soda taxes would rectify the externality. The distance between theory and practice in the real world is great enough to warrant much skepticism over the ability of policymakers to calculate the “correct” tax and then implement it in a world where politics and special interests have vested interests in designing tax codes.

Policymakers must legislate “correct” taxes to truly correct externalities. Since it remains unclear that soda consumption causes obesity or whether it reflects negative or positive externalities, the possible range of “correct” soda taxes lies between positive, zero, and negative values. Thus, it is unclear if obesity should be taxed, subsidized, or simply left alone, although tax advocates assume it should be taxed. Even if they are correct, the probability that policymakers know the correct tax is slim to none, thus leading to further possibilities that the tax is set too high, causing further erosion of resource efficiency.

Economic theory also indicates that, if there are negative externalities, taxes should vary over different beverages as well as different groups of consumers. Studies imply that the effects of NSBs on obesity differ for different types of drinks and, because different racial/ethnic groups have different preferences, that taxes should vary between groups. As noted above, the prevalence of obesity is highest for non-Hispanic blacks, followed by Hispanics, and then non-Hispanic whites. In addition, consumption data reveal that white persons consume more carbonated soft drinks than other race/ethnic groups, and that blacks consume more

high-calorie fruit drinks and ades. If NSBs are a major cause of obesity, then these data suggest that fruit drinks and ades are a greater cause of obesity than carbonated soft drinks, and therefore fruit drinks and ades should be subjected to a higher tax than carbonated soft drinks. Yet there are no estimates of how much greater are the externalities of fruit drinks and ades than carbonated soft drinks, so there is no basis for determining the correct taxes. It is also unlikely that differential taxation across racial/ethnic groups would be legislated, thus again calling into question the ability of policymakers to “correctly” tax beverages for various externalities.

**The non-obese** Although common sense indicates that not all soda drinkers are obese or even overweight, a soda tax cannot differentiate between consumers by their weight. Even if soda consumption causes obesity, there is no logic to tax-

substitutes. What beverages and food consumers would switch to and what the social effects of that change would be are not known.

Soda tax advocates seem to believe that a soda tax will lead to more water and diet drink consumption, but it is likely that substitutions into other products with caloric properties similar to soda will arise, with overall effects on weight unknown. Moreover, a supply of new drink choices is likely to emerge that creatively circumvents the new taxes, thus again muting intended reductions in sugar consumption.

Examples of unintended consequences of interventions abound. A 2004 study by M. C. Farrelly et al. and a 2006 study by J. Adda and F. Cornaglia both indicate that tax hikes on cigarettes have led smokers to switch to higher tar and nicotine brands so that they can maintain chemical intake levels as they smoke less, to the detriment of their health. A 2001

## Recent economic research indicates that factors other than soda consumption are probable causal factors of obesity

ing consumers — even excessive ones — who do not have weight problems.

Moreover, taxes on all soda consumers are likely to exert differential effects on light vs. heavy drinkers. A recent study finds that taxes on alcohol consumption significantly lower drinking by light drinkers, but not heavy drinkers. Thus, taxes dramatically lower consumption of those who drink relatively little, but exert little to no effect on consumption habits of those individuals who are the targets of policymakers. There is little reason to suspect anything different in the case of soda taxes.

Soda tax hikes are also unlikely to be large enough to significantly lower the weight of the population. A recent paper by Jason Fletcher et al. examined how state tax rate changes from 1990 to 2006 affected body mass index. They found that a one percentage point increase in the tax rate was associated with a decrease of just 0.003 points in body mass. Thus, even a large tax increase is unlikely to exert much effect on population weight. The authors concluded, for example, that a 58 percent tax on soda, equivalent to the average federal and state tax on cigarettes, would drop the average body mass by only 0.16 points — a trivial effect given that obesity is defined as a body mass index of at least 30. Thus, it is most unlikely that taxes could be raised enough to transform the obese into much slimmer people.

**Substitution** Unintended consequences of government intervention arise whether or not its advocates wish to acknowledge them. Economic theory demonstrates that taxes focused on one product, such as soda, will lead consumers to purchase

study by John DiNardo and Thomas Lemieux found that teen marijuana consumption rose following state tax increases on beer. A 2004 study by S.-Y. Chou et al. found that higher cigarette prices, which reduce smoking, are associated with higher rates of obesity.

Recent research suggests a few of the unintended consequences of soda taxes. Some consumers will likely switch to diet sodas, but some researchers worry that the health effects of artificial sweeteners may be worse than those of regular sugar. A recent study by Gideon Yaniv et al. concludes that a tax on junk food (including soda) could increase obesity as it leaves less time for exercise, especially among physically active people, when it leads them to spend more time shopping for fresh ingredients and preparing food at home.

**Other causes of obesity** Recent economic research indicates that factors other than soda are probable causal factors of obesity. A 2003 study by Tomas Philipson and Richard Posner finds that technological change has reduced the demands for heavy labor and thus created a more sedentary workforce prone to weight gain. Another 2003 study by David Cutler et al. points out that improvements in food-storage technology have reduced the time cost of preparing meals, which leads to more food and beverage consumption. Finally, huge innovations in medical technology that include treatment of obesity-related illnesses have arisen that lessen health-related costs of obesity. As a result, some people have become less concerned about their weight. It remains unclear how a soda tax would overturn any of these factors that contribute to weight gain.



**Diversion of funds** Despite good intentions or political promises to the contrary, past efforts to fund prevention programs often fund very little of those programs. Tobacco control is a clear example of where promises failed to meet practice. It has been estimated that no more than 10 cents on the dollar of funds from the 1998 Master Settlement Agreement with tobacco companies have been spent on tobacco control programs, despite promises that a majority of the funds would be aimed at smoking prevention. Given the current fiscal imbalances at the state and federal levels, increased tax revenues generated through soda taxes would surely have a similar fate. Moreover, spending on tobacco control has been shown to exert trivial effects on cigarette consumption, thus calling into question the effectiveness of public spending on obesity prevention efforts.

## CONCLUSION

We have argued that soda taxes are unlikely to correct for any real or imagined problems related to our nation's obesity rate. It is not only unclear that soda causes obesity, but even if it did, policymakers have neither the technical expertise nor political courage to set taxes that correct any externality problems.

Even if policymakers did have such expertise, soda taxes would likely be regressive, as lower-income households spend a greater share of their income on soda than higher-income households. As such, soda taxes would disproportionately fall on the poor — soda drinkers who may or may not be obese. If non-obese individuals truly pay some of the higher health care costs of the obese, the best solution would be to correct this negative externality through imposing surcharges on health insurance premiums of the obese. **R**

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