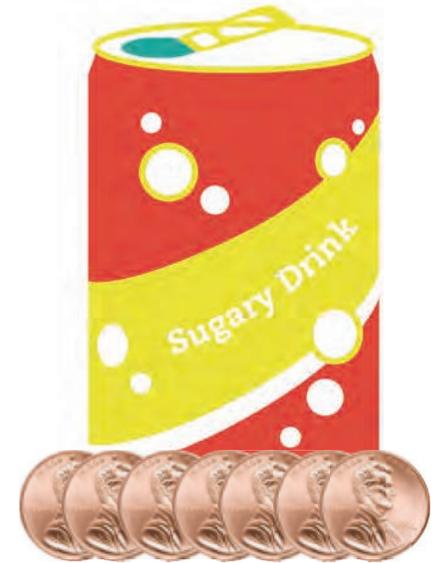




Are sugary drink taxes working? Early evidence is promising

Key Findings

- Sugary drink taxes have led to a significant decline in sugary drink consumption in Mexico and Berkeley, CA
- Reduced consumption of sugary drinks is expected to prevent thousands of new cases of obesity, diabetes, and heart disease, while reducing health care costs
- Evidence so far does not support industry claims that taxes will have a negative impact on jobs and small businesses



Introduction

After years of speculation about the effects of sugary drink taxes, evidence on their impact has grown rapidly in the last 1-2 years. Past commentaries in favor of sugary drink taxes were based largely on modeling studies and parallels to tobacco taxes that have been highly effective. Real-world evidence on sugary drink taxes was limited because no large sugary drink taxes had been implemented and rigorously evaluated. This changed after Mexico and Berkeley, CA passed large sugary drink taxes in 2014. Since then, several studies have documented the effects of these taxes on prices, purchases, and consumption of sugary drinks. Several modeling studies have also projected the long-term impact that taxes could have on population health.

As momentum for sugary drink taxes continues to grow, it is useful to step back and review the evidence that has accumulated. In this brief, we review evidence from Mexico and Berkeley, as well as recent modeling studies. This includes an assessment of whether industry counterarguments to sugary drink taxes hold up to scrutiny.

Are prices passed on to consumers?

The effectiveness of sugary drink taxes likely depends on whether the tax is passed on to consumers. Some experts speculated that distributors or retailers might pay the tax themselves or distribute it across untaxed products to avoid losing customers, which would negate the impact of a tax on consumer behavior.

Several studies have tested this speculation by analyzing price changes that occurred after taxes were implemented in France, Mexico, and Berkeley. Overall, national taxes tend to be passed on more than local taxes. Studies in Mexico¹ and France² found that national taxes were passed entirely on to consumers, on average. Even within a country, though, the degree of pass-through may vary by characteristics such as type of

Pass-through is the amount of tax that is passed on to consumers by increasing the selling price of a product. For example, 100 percent pass-through of a penny-per-ounce tax would add 12 cents to the shelf price of a 12 ounce can of soda.

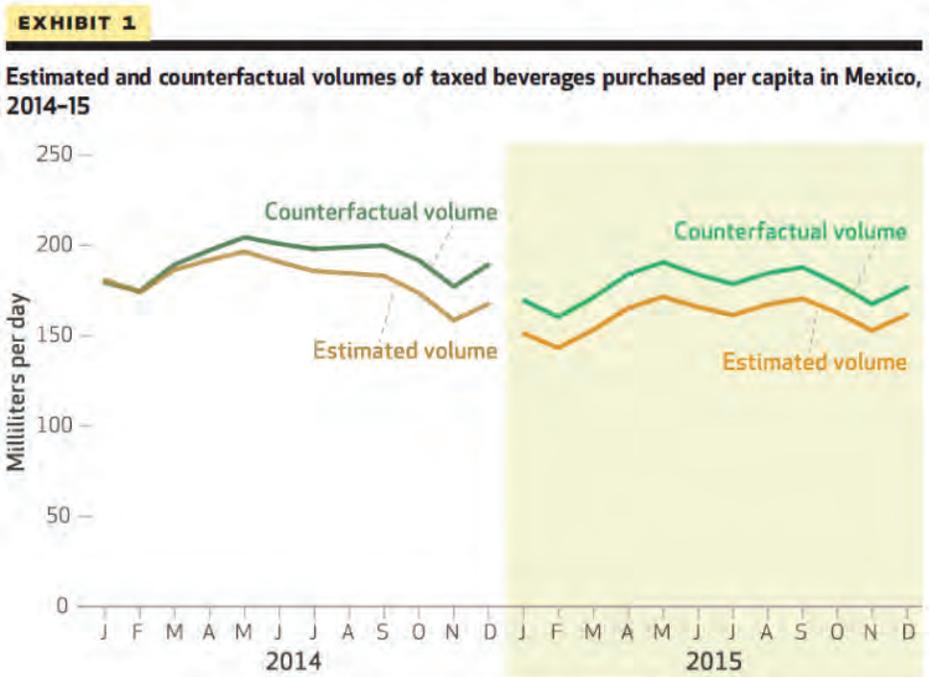


beverage, beverage size, and region. For example, research in both countries found evidence of overshifting for carbonated soft drinks (i.e., more than 100 percent pass-through) and incomplete pass-through for non-carbonated sugary drinks.

Pass-through rates in Berkeley have been lower compared to Mexico or France, but evidence is also less consistent. Three studies analyzed price changes in Berkeley and came to slightly different conclusions. Cawley and Frisvold found that only 43 percent of the tax was passed onto consumers, regardless of beverage brand or size.³ Falbe and colleagues found a 47 percent pass through overall, with a much higher percentage for specific beverage types (e.g., 69 percent for soda).⁴ Silver and colleagues found an overall pass-through of 67%, but there was substantial variation by store type. For example, the tax was fully passed on in chain groceries, but not passed on at all in smaller, independent stores.⁵ Cawley and Frisvold found that pass through was lowest among stores located near other stores selling untaxed sugary drinks.³

Are sales and consumption affected?

Evidence on consumption has been consistent and encouraging. Several studies have found, as expected, that taxes led people to purchase and consume fewer sugary drinks. In Mexico, Colchero and colleagues found that sales decreased over time from 6 percent in 2014 (the first year of tax implementation) to 10 percent in 2015. The change was larger in low-socioeconomic households (9 percent in 2014 and 14 percent in 2015).⁶ Colchero and colleagues also found that sales of untaxed products such as bottled water increased by 2 percent in 2014-15 combined. Evidence on France’s sugary drink tax is less advanced, but one report found that demand for regular cola declined by 7 percent in the first two years after France’s tax was implemented, after increasing in previous years.⁷



Sales of taxed sugary drinks decreased throughout the first year (2014) of Mexico’s tax compared to what would have been expected without the tax (“counterfactual volume”). In the second year (2015), sales consistently remained about 10 percent below the counterfactual, suggesting that a tax can create a sustained reduction in sugary drink consumption. (Source: Colchero et al, 2017)

In addition to reducing consumption, Berkeley’s tax raised over \$3 million in tax revenue as of March 2017.⁹ This revenue has been used to fund community groups to provide health and nutrition education, and to make fruits and vegetables more available in low-income communities. Philadelphia’s sugary drink tax, which funds pre-K, community schools, parks and recreation sites, and libraries, has generated over \$19 million in its first three months, which is greater than the amount predicted by the city.¹⁰



Sugary drink sales



Water sales



How would lower consumption translate into long-term health effects?

It will be several years before evaluations can detect any effects of sugary drink taxes on disease rates. However, several modeling studies have projected the long-term impact of taxes on disease rates, health care costs, and quality of life. Harvard University’s Childhood Obesity Intervention Cost Effectiveness Study (CHOICES), for example, modeled the impact of a national penny-per-ounce excise tax in the United States and found that it would prevent 576,000 cases of childhood obesity¹¹ and save \$23.6 billion in health care costs¹² over 10 years. In another study, the CHOICES research team found that the effect would be slightly larger in communities of color.¹³ Modeling studies in Germany,^{14,15} South Africa,¹⁶ and Australia^{17,18} have likewise projected that sugary drink taxes could have a substantial impact on a wide range of diseases including obesity, stroke, and dental caries, as well as associated health care costs.^{15,18,19}

These modeling studies rely on assumptions about the effect that the tax will have on sugary drink consumption, and predict changes in health outcomes from there. In Mexico, Barrientos-Gutierrez and colleagues

were able to use observed changes in sugary drink consumption to predict the impact of the tax on obesity and diabetes. Based on the 6.1 percent reduction in sugary drink consumption observed in the first year of the tax by Colchero and colleagues,²⁰ they expect that, in ten years, obesity prevalence will decline by 2.5 percent overall and 7.3 percent among the heaviest consumers of sugary drinks, and 92,000 new cases of diabetes will be prevented by 2030.²¹ Another study by Sanchez-Romero and colleagues projected that a 10 percent decline in consumption of sugary drinks in Mexico, which is the decline seen in the second year of the Mexico tax, would prevent 20,400 new strokes and heart attacks and save 18,900 lives over 10 years.¹⁹

Results of a National Penny-Per-Ounce Sugary Drink Tax:



Childhood Obesity
576,000
fewer cases
over 10 years



Healthcare Savings
\$26.33 billion
over 10 years

Have taxes had unintended consequences?

Three common claims against sugary drink taxes are that taxes are “regressive” (i.e. low-income people will pay more), that people will compensate by purchasing in nearby cities, and that taxes will cost jobs. There is little evidence from modeling studies, Mexico, or Berkeley to back up these claims.



Opponents of sugary drink taxes argue that low-income consumers will be inequitably burdened by an excise tax. What is known is that low income communities are currently disproportionately affected by the chronic diseases associated with sugary drink consumption. An important purpose of the tax is to reduce consumption of sugary drinks and improve public health. In Mexico, low income households reduced purchase and consumption of sugary drinks more than higher income households,⁶ and Falbe and colleagues similarly found a large impact on consumption in low-income neighborhoods in Berkeley.⁸ Reduced sugary drink purchases could free up more money for healthier foods and beverages, and reduced consumption among low-income communities could ultimately contribute to reducing health disparities. Additionally, revenues from sugary drink taxes are generally earmarked for social programs serving low-income communities, such as improving education and healthy food access.

The overall positive impacts of sugary drink taxes will be progressive - low-income communities will reap the most benefits from lowered consumption of sugary drinks and from increased investments in their community.

Additionally, A systematic review by Backholer and colleagues summarized several modeling studies that estimated socioeconomic differences in the effect of sugary drink taxes and found that the difference in the amount of tax paid by high- and low-income households was never greater than \$5USD,²² though this may be an underestimation because it is based on a smaller tax rate than what has been proposed and passed so far.

As for jobs and cross-border shopping, Falbe and colleagues found that only two percent of people bought sugary drinks outside of Berkeley due to the tax,⁸ and Silver and colleagues found that store revenues fell no more in Berkeley than in neighboring cities.⁵ Powell and colleagues projected that sugary drink taxes would have a small net positive impact on jobs,²³ and preliminary observational data from Mexico and Berkeley do not support the industry's claim of job loss. Employment data from 2015 in Mexico showed no decrease in total employment in beverage or food retail industries,²⁴ and data from Berkeley found that food sector jobs actually increased by 7.2% in the year following tax implementation.²⁵ While this data is promising, it is still too early to tell the full economic impact of sugary drink taxes, and future evaluations should include data on jobs and revenues, especially for small businesses.

Unanswered questions

Although evidence on sugary drink taxes has grown considerably, many questions remain. Studies have generally focused on sales or consumption of beverages; researchers have not studied if people compensate by substituting different food products. Because taxes have only been in place for 1-2 years, there has not been enough time to observe the long-term impact on weight change or disease rates. Industry has alleged that sugary drink taxes are a “grocery tax” because retailers shift the price increase to other food and beverage products. Evidence from Berkeley suggests that consumer's average grocery bill is not affected by a sugary drink tax,⁵ but no study has examined price changes on products other than beverages.



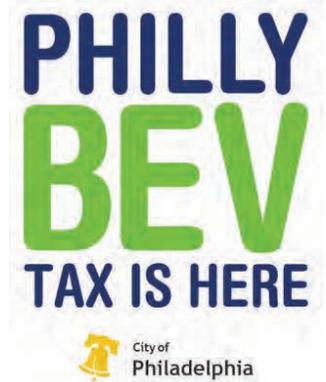
All of the evidence so far has been based on observed changes in sales and consumption following implementation of taxes. While these changes are likely caused by increased prices of taxed beverages, the campaigns leading up to tax passage may also contribute to changing norms and attitudes about sugary drinks. This theory was supported by one study from Berkeley that found a decrease in sugary drink sales in university dining halls in the interim period after the tax was passed, but before it had been implemented.²⁶ Future research could examine the changes in attitudes and behaviors of residents in communities that are actively campaigning for taxes to determine the impact of the campaign alone.

Finally, although the number of studies has grown substantially, it is still limited to a small number of cities and countries. As taxes are implemented in several other jurisdictions in the U.S., including Philadelphia, San Francisco, Oakland, Boulder (CO), Cook County (IL), and the Navajo Nationas well as other countries such as the United Kingdom and South Africa, there will be more opportunities to assess whether the effects apply to different types of communities. The U.K.'s tiered tax that is partially based on sugar content will also give researchers an opportunity to evaluate whether a sugar-based tax is more effective than a pure volume-based tax.

Conclusions

Early evaluations of sugary drink taxes implemented in Mexico and Berkeley, CA show that taxation is an effective strategy to reduce sales and consumption of sugary beverages, without the negative economic consequences predicted by industry opponents. While it is too early to determine the health impacts of this reduced consumption, several robust modeling studies project reduced incidence of obesity, diabetes, and heart disease, as well as substantial health care savings. Several unanswered questions remain, particularly the impact that sugary drink taxes will have on overall dietary patterns. Further research is needed to determine if consumers are replacing sugary drinks with other beverages or foods, and whether or not those substitutions are healthier. Additional research is also needed to determine the full economic impact of taxes on small businesses to address community concerns.

Evidence on the efficacy of sugary drink taxes will continue to grow quickly as more cities and countries pass and implement them. Stay tuned for more!



Philadelphia began implementing their tax in January 2017, becoming the second major U.S. city to implement a sugary drink tax. (Source: www.phillybevtax.com)



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