

Sugary drink tax models show health gains, cost reductions, but vary by tax design (Update)

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A simulation model of different designs of taxes on sugary drinks, which are linked to obesity, cardiovascular disease and diabetes, suggests that all tax designs would generate substantial health gains as well as lower health costs in the U.S., according to new research published today in the

American Heart Association's flagship journal *Circulation*. However, some of the models perform better than others.

Frequent consumption of sugary drinks is strongly linked to weight gain, Type 2 diabetes and cardiovascular disease. Sugary drinks remain the largest source of added sugars intake in the U.S., with about 60% of children and half of adults consuming sugary drinks every day.

Boston researchers created a nationally representative microsimulation model to test three types of taxation on sugary drinks: a flat "volume tax" by drink volume (\$0.01 per ounce), the only type used in U.S. cities to-date; a "tiered [sugar](#) content tax" by 3 levels of sugar content (ranging from \$0.00 for less than 5 grams of added sugars per 8 ounces, to \$0.02 per ounce of added sugars for more than 20 grams of added sugars per 8 ounces); and a "fixed sugar content tax" by absolute sugar content (\$0.01 per teaspoon of added sugars, regardless of the number of ounces).

Under the simulation scenario, the researchers found all three tax structures would generate tax revenue, lower health care costs and prevent cardiovascular disease events and diabetes cases. However, the tiered tax and sugar content tax could generate the largest health gains and [cost savings](#). Any of the tax designs could be effective public health policy tools that may be able to reduce consumption of sugary drinks, and thus improve health and overall well-being, the researchers noted.

Younger adults (ages 35 to 44 years), blacks and Hispanics, and adults with lower incomes were estimated to experience the largest health gains. Thus, the research suggested that all three sugary drink tax designs may reduce health disparities, particularly among these subgroups.

"Overwhelming evidence confirms that food prices have a big impact on purchasing decisions. Taxing sugary drinks influences consumer choices, reducing consumption," said Yujin Lee, Ph.D., a postdoctoral fellow of

the Friedman School of Nutrition Science and Policy at Tufts University in Boston and the co-lead study author. "U.S. cities have introduced volume taxes on sugary drinks. But our findings suggest that a tiered fixed sugar content tax would be best, reducing consumer intakes while also encouraging manufacturer reformulations to reduce the sugar content of their products."

Researchers estimated the potential health impact, quality-adjusted life-years (a measure of disease burden) costs and cost-effectiveness of volume-based and sugar content-based (tiered, fixed) sugary drinks taxes in the U.S. They used nationally representative data and a validated computer simulation model that incorporated data on adults ages 35 to 80 across three National Health and Nutrition Examination Survey cycles (2009 to 2014) to derive sociodemographics, cardiometabolic risk factors and lifestyle habits. Net costs were calculated from adding the expense of the government's implementation of tax collection plus the industry's compliance and reformulation costs, then subtracting health care savings from fewer medical screenings, treatments, medications, surgeries and supplies, discounted at 3% annually.

In the U.S., seven cities (Philadelphia; Seattle; Boulder, Colorado; and Berkeley, Albany, Oakland and San Francisco, California) currently have volume-based taxes for sugary drinks as does Mexico, Belgium, Brunei, Norway and the Philippines. The American Heart Association currently advocates for a tiered sugar content tax as an effective approach to achieve better health and expand healthier options. The Association has also supported volume-based sugar taxes, which were able to be passed in those seven cities. Taxing sugary drinks based on sugar content (i.e., tiered or fixed tax) has been implemented in other countries, including Chile, Ireland, the United Kingdom, France, Portugal and South Africa.

The simulation found that, compared to the status quo, over a lifetime, a

volume-based tax could:

- prevent 850,000 cardiovascular (CVD) events;
- prevent 269,000 cases of diabetes;
- gain 2.44 million quality-adjusted life years across the population;
- generate \$80.4 billion in federal tax revenue; and
- save \$53.2 billion net health care costs.

However, the tiered- and absolute-sugar content tax structures could double those gains.

In the simulation model, a tiered tax would:

- prevent 1.67 million CVD events;
- prevent 531,000 diabetes cases;
- generate \$142 billion in tax revenue;
- gain 4.85 million quality-adjusted life years across the population; and
- save \$105 billion in net health care costs.

Similarly, the simulation estimated that an absolute content tax would:

- prevent 1.8 million CVD events;
- prevent 550,000 diabetes cases;
- generate about \$42 billion in tax revenue;
- gain 5 million quality-adjusted life years across the population; and
- save \$105 billion in net health care costs.

For this study, the researchers defined sugary drinks as soft drinks/sodas, juice drinks, sports drinks, pre-sweetened iced tea or coffee, and electrolyte replacement drinks with 5 or more grams of added sugars per

12 ounces. Consumption of [sugary drinks](#), including their added sugars content for each person, was derived from two, 24-hour dietary recalls per person.

Given that the projections and modeling are based on observational data, the study does not establish a causal link between the health and cost effects of these sugary drink tax designs in U.S. adults. Rather, the estimates provide evidence that can be considered and incorporated into the design, implementation and evaluation plans of potential taxes, including at local, state or federal levels. The model's population also did not include children, adolescents or adults under age 35.

"Our study underscores the importance of considering different sugary drink tax designs in any new local, state and federal efforts to improve health outcomes and save health care costs," Lee said.

More information: *Circulation* (2020). [DOI: 10.1161/CIRCULATIONAHA.119.042956](#)

Provided by American Heart Association

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