

Reducing Sugar-Sweetened Beverage Consumption A Focus on Sugar-Sweetened Beverage Taxes Revised - June 2016

Background

Sugar-sweetened beverages include soft drinks, sodas, fruit drinks, sweetened coffees and teas, energy drinks, sports drinks, and sweetened waters. They are the single largest source of added sugars in the American diet, providing over 5% of overall caloric intake.^{1,2} Full-calorie beverage consumption is on the decline; however, beverage consumption as a whole is increasing, especially with the mid-calorie drinks (e.g. sports drinks, teas, and energy drinks).³ Beverage consumption trends vary across age, sex, and race/ethnicity. In general, males consume more beverages than females, African Americans consume more fruit drinks and Caucasians drink more carbonated soft drinks.⁴ Children and adolescents derive 10% to 15% of their total calories from sugar-sweetened beverages and 100% fruit juice⁵ equivalent to about 39 pounds of sugar each year.⁶ A 20-ounce bottle of soda contains approximately 17 teaspoons of sugar.⁷ The American Heart Association recommends that adults consume no more than five to nine teaspoons of added sugar per day.⁸ These beverages produce low satiety levels, and provide incomplete compensation for total energy intake.⁹ The American Heart Association has made it a strategic priority to reduce consumption of sugar-sweetened beverages in the US population to improve cardiovascular health.¹⁰

Why the urgency to address sugary drink consumption?

The US is in the midst of an obesity epidemic. Currently, 69% of U.S. adults are overweight while more than one-third (35%) are obese¹¹ while 17% of children are obese and 5.8% are extremely obese.¹² Diabetes is increasing at an alarming rate across the United States. From 1980 through 2014, the number of Americans diagnosed with diabetes increased fourfold from 5.5 million to 22 million and did so disproportionately in blacks, American Indians/Alaskan natives, Hispanics, those with less than a high school education, and those over the age of 65.^{13 14} Sugar-sweetened beverage consumption has been linked to an increased risk for type 2 diabetes, obesity, hypertension, coronary heart disease, and tooth decay with particular impact in low-income, and racial/ethnic sub-groups.^{15 16 17 18}

American Heart Association Policy Priorities to Reduce Sugar-sweetened Beverage Consumption

The American Heart Association supports a multipronged approach to address sugar-sweetened beverage consumption including creating and implementing policies designed to improve access to affordable, nutritious foods and beverages, making it easier for Americans to choose healthier foods consistent with the *Dietary Guidelines for Americans*.¹⁸ Specifically, the association supports taxing sugar-sweetened beverages, regulating consumption of these drinks in federal nutrition programs [e.g. Supplemental Nutrition Assistance Program (SNAP), Child and Adult Care Feeding Program (CACFP), the National

Policy Research: Linking scientists, clinicians and policymakers to help improve cardiovascular health and decrease heart disease and stroke mortality.

School Lunch and Breakfast Programs], in competitive foods in schools, in food service guidelines for government buildings, hospital systems, workplaces, and other public places, and adding warning labels to sugary drink beverage containers. The AHA also supports increasing access to safe, clean, drinking water in schools and communities as an important replacement for consuming sugary drinks, working with major supermarket chains to address the cooperative marketing agreements with beverage companies to prioritize the prime placement of healthier beverages in stores, and eliminating the marketing of sugar-sweetened beverages to children.

The Rationale for Sugar-sweetened Beverage Taxes

Evidence is increasing that sugar-sweetened beverage taxes are an efficacious means of reducing sugary drink consumption in the population. Preliminary data from Mexico's one peso/liter excise tax on sugar-sweetened beverages showed an approximate 10% decline in purchases of these taxed beverages while demonstrating a 13% increase in plain water purchases during the same time period.¹⁹ Households of low socioeconomic status reduced purchases of taxed beverages by 17%.¹⁹

Studies have shown that diet is linked to economic incentives and disincentives.²⁰ For food eaten away from home, soft drinks, juice, and meats are the most responsive to price changes.²¹ One modeling study calculated that a 10% price increase might decrease consumption of less healthy foods and beverages by 8-10%.²¹ Other modeling has shown that a penny-per-ounce tax would reduce consumption by 15% among adults 25-64 years of age and prevent 2.4 million diabetes person-years, 95,000 coronary heart events, 8,000 strokes, and 26,000 premature deaths, avoiding more than \$17 billion in total medical costs.⁷ Estimates are that this would reduce new cases of type 2 diabetes by 2.6 percent and obesity prevalence by 1.5%.⁷ In 2005, children between the ages of 12 and 19 spent an estimated \$159 billion on food, candy and soft drinks.²² Because youth are more responsive to price change than adults, the potential exists for an even greater impact on consumption by youth.²³

In 2014, the nation's first dedicated soda tax campaign passed in Berkeley, CA. The measure imposed a one cent/ounce general tax on sugar-sweetened beverages and sweeteners used to flavor drinks. It provided exemptions for diet drinks, milk products, 100% juice, baby formula, alcoholic drinks, and drinks taken for medical reasons. This tax has been successfully implemented.^{24, 25} Vulnerable populations, especially low-income and less educated, as well as children and adolescents, are especially price-sensitive.^{26, 27 28} They also represent population groups that have the greatest health disparities and would most likely benefit most from lower consumption of sugary beverages.⁴ Contrary to what some tax opponents say about potential job losses with SSB tax implementation, early research has indicated that the imposition of a tax on sugar-sweetened beverages could result in a state level net job employment increase.²⁹

The AHA has focused on the issue of taxing beverages that contain added sugars and caloric sweeteners and has not addressed taxing less healthy foods, as the food environment is more complex and requires greater nuance. Since sugar-sweetened beverages are the leading source of added sugar in the food supply they represent an important lever for decreasing the amount of added sugars and calories in population dietary intake.

Tax Structure

As sugar-sweetened beverage taxes emerge as an important policy strategy to decrease consumption of unhealthy beverages and lower caloric intake, it is important to consider the different tax structure scenarios that have been used to determine the optimal industry response to decrease beverage sizes, lower their added sugars content and increase consumer demand for healthy beverages. Experience in tobacco tax policy has shown that the best approach is an excise tax where the price increase is passed onto the consumer at the time of purchase. The UK will apply a tiered sugar-sweetened beverage tax starting in 2018:

- The tax will be paid by producers and importers of soft drinks that contain added sugars but excludes pure fruit juices and milk-based drinks.
- The tax will operate with a specific revenue target of £500 million for the second year of implementation (2019-20) which will be used for youth physical education and sports programs.
- Beverages with less than 5 g/100 ml of sugar are not taxed; there is a main rate charge of 18p/litre for drinks with 5–8g of sugar per 100ml and a higher rate charge of 24p/litre for drinks with more than 8g per 100ml
- Since the proposed tax is levied per liter of product this means that the ultimate tax per gram of sugar is lower for more sugary products, i.e. someone could pay less tax and consume more sugar (ex. 3 litres Coca Cola: 318 grams of sugar, 72p of tax; 2 litres Sainsbury's Orange Energy Drink: 318 grams of sugar, 48p of tax); however the UK is categorizing beverages by sugar content and levying by volume; so it is conceivable that industry will be motivated to reduce added sugars content and beverage size to minimize the tax impact.

This approach is different than the constant per fl. oz. excise tax like those applied in Berkeley and Mexico.

A recent analysis ³⁰ done by the Urban Institute on behalf of the American Heart Association shows that there is a tradeoff: uniform volume taxes are a more efficient way to raise revenue, however if the purpose is to change behavior, an SSB tax linked to sugar content would be preferred. Taxes linked to sugar content may also encourage the beverage industry to shift its product lines and marketing towards lower-sugar products. Taxes linked to sugar content would be large relative to the cost of sweeteners, so they could provide a significant incentive for industry reformulation. However, evidence on the magnitude of such effects is limited. There is also the potential consequence that industry will replace the sugar with non-nutritive sweeteners. Although non-nutritive sweeteners are already ubiquitous in the food supply, there is some recent evidence ³¹ that they may be metabolically active and interfere with glucose control and energy metabolism, however more research is needed to determine if there is a population health impact since most of the research has been on animal models. The AHA does not feel there is currently adequate evidence to include diet beverages in its definition of sugar-sweetened beverages for taxation.

Based on the recent evidence and modeling, the American Heart Association favors and promotes a tiered approach to taxation focusing on grams of sugar/fl. oz. levied by volume (this would be grams of added sugar/fl. oz. when the new federal labeling takes effect in 2018). The association would not oppose a tax campaign that chose to take a uniform

volume approach since this kind of excise tax has documented success in Mexico and Berkeley, even in low-income populations.

Assuring some of the revenue goes to promote population health

With a stagnant economy, many states and localities are facing significant budgetary shortfalls. Policy makers from around the country have begun proposing new taxes on sugary beverages to help raise revenue to fund these shortfalls and to pay for prevention programs. The Congressional Budget Office estimates that a tax of 3¢ per 12 oz. drink would raise just under \$5 billion per year.³²

It is expected that sugar-sweetened beverage taxes will have a greater impact if at least some of the tax revenue is dedicated to obesity prevention or health promotion programs. There is also more support of sugar-sweetened beverage tax campaigns when voters learn that some of the revenue will be dedicated to prevention programs.^{33 34} Healthcare costs attributable to obesity could reach between \$861 and \$957 billion by 2030.³⁵ Nearly half the health care costs associated with obesity and diabetes are paid for through taxpayer-funded Medicare and Medicaid programs and through higher insurance payments in private plans.³⁶

Implementation

A recent memo³⁷ developed by the Urban Institute on behalf of the American Heart Association outlined key considerations around implementation of sugar-sweetened beverage taxes. In most of the world, national governments have been the primary force behind taxing sugar-sweetened beverages, however in the United States, local governments typically are taking the lead. This mirrors the approach with tobacco excise taxes where tobacco control and prevention advocates were able to compromise the lobbying power of industry initially by spreading it across jurisdictions versus concentrating it at the higher level of government. Although local governments have passed and implemented targeted excise taxes, they face more challenges than national or state governments including state limits on their authority to tax, the greater potential for consumers to make untaxed purchases beyond local boundaries and limited resources for enforcement. Locally-implemented taxes can be an effective proving ground for state or federal government initiatives, however these excise taxes may be better implemented at the federal or state level to maximize their efficacy and provide fewer constraints on how they are designed and collected.

Local governments often piggyback on the collection methods and information provision of the federal and state governments when levying taxes on tobacco, alcohol, and motor fuels. Using similar or identical definitions of taxed products makes local excise taxes easier to comply with and administer. With sugar-sweetened beverages where definitions are not yet consistent across jurisdictions this may be more challenging. Cities are breaking new ground in designing and implementing these taxes.

For ease of compliance, it makes sense for local governments to tax distributors, rather than retailers (which are much more numerous) or manufacturers (which may be geographically remote). However, there needs to be a backstop of taxing retailers if they purchase from non-compliant distributors (Berkeley does this and Philadelphia has proposed the same). A national government, in contrast, might find it simpler to collect the

tax further up the supply chain from manufacturers and importers as Mexico does.

Sugar-sweetened beverages differ greatly in their total and added sugars content. So an important question is whether governments can design feasible taxes that reflect added sugars content, not just drink volume. Given the greater compliance burdens, a tax that varies exactly with added sugars content would work better at the federal or large state level than the local level. A good parallel here is the way governments tax alcoholic spirits. The federal government taxes spirits based on alcohol content, calibrating the amount of tax to the number of “proof gallons,” but states (and the few local governments that have separate taxes) generally pursue a simpler approach, taxing spirit volume uniformly or within a few tiers.

Local governments can, however, feasibly tax SSBs based on tiers of sugar content. Berkeley, for example, applies its penny-per-ounce tax only to products with at least 2 calories per ounce, equivalent to about 4 grams of sugar per 8-ounce serving. These are very low thresholds relative to the typical sugar content of SSBs and thus exempt only a small number of SSBs from taxation. But they pose the same basic compliance issues as a tax with one or two higher thresholds, such as the 12 grams of sugar per serving or 19 grams per serving. To administer these taxes, distributors and administrators need access to reliable added sugars content information, which is easily available for the large regional and national brands that make up most sales volume and whose formulas tend to be stable over time. There would be a one-time burden of categorizing products as untaxed and taxed or untaxed, low tax, and high tax plus periodic review to identify any changes in added sugars content.

Linking taxes to a product’s composition, rather than just its value or amount, is not common but does happen for other important taxes. As noted, the federal government taxes spirits based on alcohol content. Several states apply tiered taxes to wine and beer based on alcohol content. And federal and state taxes break products into categories—e.g., beer/wine/spirits or gasoline/diesel/ethanol—to levy different tax rates. Hungary has pursued a tiered approach in its suite of taxes on unhealthy foods, Britain has proposed a two-threshold tax for sugary drinks, and Mexico uses a single threshold to determine which processed foods should be taxed. Given the wide range of added sugars content in drinks, local governments should similarly consider a tiered structure in designing SSB taxes.

Summary AHA Policy Position on SSB Taxes

The American Heart Association supports taxing sugar-sweetened beverages as an important policy intervention within a multi-pronged policy, programmatic, systems, and environment change approach to decrease consumption across the US population with the goal of improving health. Ideally these taxes would be structured in a tiered approach that considers grams of added sugars/fl. oz. (added sugars by 2018 when federal labeling is implemented) and levies the tax by volume, to optimally decrease consumer consumption of less healthy beverages and spur industry reformulation. The association would not oppose campaigns that take a uniform volume approach of at least a penny per oz. since this has shown efficacy in modeling studies and with implementation in Mexico and Berkeley, especially in vulnerable populations. The American Heart Association will advocate that at least a portion of the revenue be dedicated to primary and secondary prevention programs, counter-marketing programs, or other investments that address population health and will

also assure there is rigorous evaluation associated with implementation to optimize impact on population health, revenue generation, and industry reformulation and marketing.

References:

1. What we eat in America (WWEIA) Food Category Analyses for the 2015 Dietary Guidelines Advisory Committee: Estimates based on day 1 dietary recalls from WWEIA, NHANES 2009-10. 2015.
2. Huth PJ, Fulgoni VL, Keast DR, Park K and Auestad N. Major food sources of calories, added sugars, and saturated fat and their contribution to essential nutrient intakes in the U.S. diet: data from the National Health and Nutrition Examination Survey (2003-2006). *Nutrition journal*. 2013;12:116.
3. Pomeranz JL, Munsell CR and Harris JL. Energy drinks: an emerging public health hazard for youth. *Journal of public health policy*. 2013;34:254-71.
4. Storey ML, Forshee RA and Anderson PA. Beverage consumption in the US population. *Journal of the American Dietetic Association*. 2006;106:1992-2000.
5. Wang YC, Bleich SN and Gortmaker SL. Increasing caloric contribution from sugar-sweetened beverages and 100% fruit juices among US children and adolescents, 1988-2004. *Pediatrics*. 2008;121:e1604-14.
6. Babey S, Jones, M., Yu, H., Goldstein, H. Bubbling over: soda consumption. *Health Policy Research Brief*. September 2009.
7. Wang YC, Coxson P, Shen YM, Goldman L and Bibbins-Domingo K. A penny-per-ounce tax on sugar-sweetened beverages would cut health and cost burdens of diabetes. *Health Aff (Millwood)*. 2012;31:199-207.
8. Johnson RK, Appel LJ, Brands M, Howard BV, Lefevre M, Lustig RH, Sacks F, Steffen LM, Wylie-Rosett J, American Heart Association Nutrition Committee of the Council on Nutrition PA, Metabolism, the Council on E and Prevention. Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association. *Circulation*. 2009;120:1011-20.
9. Malik VS, Pan A, Willett WC and Hu FB. Sugar-sweetened beverages and weight gain in children and adults: a systematic review and meta-analysis. *The American journal of clinical nutrition*. 2013;98:1084-102.
10. Lloyd-Jones DM, Hong Y, Labarthe D, Mozaffarian D, Appel LJ, Van Horn L, Greenlund K, Daniels S, Nichol G, Tomaselli GF, Arnett DK, Fonarow GC, Ho PM, Lauer MS, Masoudi FA, Robertson RM, Roger V, Schwamm LH, Sorlie P, Yancy CW, Rosamond WD, American Heart Association Strategic Planning Task F and Statistics C. Defining and setting national goals for cardiovascular health promotion and disease reduction: the American Heart Association's strategic Impact Goal through 2020 and beyond. *Circulation*. 2010;121:586-613.
11. Ogden CL, Carroll MD, Kit BK and Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA : the journal of the American Medical Association*. 2014;311:806-14.
12. Ogden C. Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-14. *JAMA : the journal of the American Medical Association*. 2016;315:2292-2299.
13. Centers for Disease Control and Prevention. Data from the National Health Interview Study. 2015.
14. American Diabetes Association. Statistics about Diabetes. 2016.
15. Mekonnen TA, Odden MC, Coxson PG, Guzman D, Lightwood J, Wang YC and Bibbins-Domingo K. Health benefits of reducing sugar-sweetened beverage intake in

high risk populations of California: results from the cardiovascular disease (CVD) policy model. *PloS one*. 2013;8:e81723.

16. de Koning L, Malik VS, Kellogg MD, Rimm EB, Willett WC and Hu FB. Sweetened beverage consumption, incident coronary heart disease, and biomarkers of risk in men. *Circulation*. 2012;125:1735-41, S1.
17. Wang H, Steffen LM, Zhou X, Harnack L and Luepker RV. Consistency between increasing trends in added-sugar intake and body mass index among adults: the Minnesota Heart Survey, 1980-1982 to 2007-2009. *American journal of public health*. 2013;103:501-7.
18. US Department of Health and Human Services. Dietary Guidelines for Americans 2015-2020. 2015.
19. Colchero MA, Popkin BM, Rivera JA and Ng SW. Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study. *BMJ*. 2016;352:h6704.
20. Mozaffarian D, Afshin A, Benowitz NL, Bittner V, Daniels SR, Franch HA, Jacobs DR, Jr., Kraus WE, Kris-Etherton PM, Krummel DA, Popkin BM, Whitsel LP and Zakai NA. Population approaches to improve diet, physical activity, and smoking habits: a scientific statement from the American Heart Association. *Circulation*. 2012;126:1514-63.
21. Andreyeva T, Long MW and Brownell KD. The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food. *American journal of public health*. 2010;100:216-22.
22. Zenk SN and Powell LM. US secondary schools and food outlets. *Health & place*. 2008;14:336-46.
23. Chaloupka F, Jha, P., de Beyer, J., Heller, P. The economics of tobacco control. *Briefing notes in economics*. December 2004/January 2005.
24. Ordinance: Imposing a general tax on the distribution of sugar-sweetened beverage products. 2015.
25. Falbe J, Rojas N, Grummon AH and Madsen KA. Higher Retail Prices of Sugar-Sweetened Beverages 3 Months After Implementation of an Excise Tax in Berkeley, California. *American journal of public health*. 2015;105:2194-201.
26. Powell LM, Zhao Z and Wang Y. Food prices and fruit and vegetable consumption among young American adults. *Health & place*. 2009;15:1064-70.
27. Powell LM, Chiqui JF, Khan T, Wada R and Chaloupka FJ. Assessing the potential effectiveness of food and beverage taxes and subsidies for improving public health: a systematic review of prices, demand and body weight outcomes. *Obesity reviews : an official journal of the International Association for the Study of Obesity*. 2013;14:110-28.
28. Talukdar D, Lindsey, C. To buy or not to buy: Consumers' demand response patterns for healthy versus unhealthy food. *Journal of Marketing*. 2013;77:124-138.
29. Powell LM, Wada R, Persky JJ and Chaloupka FJ. Employment impact of sugar-sweetened beverage taxes. *American journal of public health*. 2014;104:672-7.
30. Marron D, Gearing, M. Options for Structuring Taxes on Sugar-Sweetened Beverages. 2016.
31. Pepino MY. Metabolic effects of non-nutritive sweeteners. *Physiology & behavior*. 2015;152:450-5.

32. Congressional Budget Office. Budget Options - Volume 1 - Health Care. December 2008.
33. Caraher M and Cowburn G. Taxing food: implications for public health nutrition. *Public health nutrition*. 2005;8:1242-9.
34. Jacobson MF and Brownell KD. Small taxes on soft drinks and snack foods to promote health. *American journal of public health*. 2000;90:854-7.
35. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, de Ferranti S, Despres JP, Fullerton HJ, Howard VJ, Huffman MD, Judd SE, Kissela BM, Lackland DT, Lichtman JH, Lisabeth LD, Liu S, Mackey RH, Matchar DB, McGuire DK, Mohler ER, 3rd, Moy CS, Muntner P, Mussolino ME, Nasir K, Neumar RW, Nichol G, Palaniappan L, Pandey DK, Reeves MJ, Rodriguez CJ, Sorlie PD, Stein J, Towfighi A, Turan TN, Virani SS, Willey JZ, Woo D, Yeh RW, Turner MB, American Heart Association Statistics C and Stroke Statistics S. Heart disease and stroke statistics--2015 update: a report from the American Heart Association. *Circulation*. 2015;131:e29-322.
36. Finkelstein EA, Trogon JG, Cohen JW and Dietz W. Annual medical spending attributable to obesity: payer-and service-specific estimates. *Health Aff (Millwood)*. 2009;28:w822-31.
37. Francis N, Rueben, K., Marron, D. Feasibility of implementing Sugar-sweetened Beverage Taxes. 2016.