



Study Synopses: Sugar-Sweetened Beverages (SSBs) and Taxes

| Citation | Funder(s) | Conclusions |
|---|--|--|
| Barry, C.L., Niederdeppe, J., Gollust, S.E. (2013). Taxes on sugar-sweetened beverages: Results from a 2011 national public opinion survey. <i>Am J Prev Med</i> , 44.2, 158 - 163. | RWJF | Findings indicated more people agreed with anti-tax versus pro-tax arguments. The most persuasive anti-tax arguments were as follows: arbitrary in targeting only one unhealthy food (60%), quick way for government to fill budget holes (58%), unacceptable intrusion into people's lives (53.8%), and harmful to the poor (51%). Highest agreement with pro-tax argument that SSBs were the single largest contributor to obesity (49%) and would raise revenue for obesity prevention (41%). |
| Briggs, A.D.M., Mytton, O.T., Kehlbacher, A., Tiffin, R., Rayner, M., Scarborough, P. (2013). Overall and income specific effect on prevalence of overweight and obesity of 20% sugar sweetened drink tax in UK: econometric and comparative risk assessment modelling study. <i>Brit Med J</i> , in press. | No funding for this particular project but study researchers have received funding from the following: British Heart Foundation; National Institute for Health Research; Union of European Soft Drinks Association | A 20% tax on sugar sweetened drinks was estimated to reduce the number of obese adults in the UK by 1.3% or 180,000 people and the number who are overweight by 0.9% or 285,000 people. The greatest effects may occur in young people. |
| Chriqui, J.F., Chaloupka, F.J., Powell, L.M., Eidson, S.S. (2013). A typology of beverage taxation: Multiple approaches for obesity prevention and obesity prevention-related revenue generation. <i>J Public Health Policy</i> , in press. | RWJF; NIH | Describes three key considerations for governments interested in exploring beverage taxation (1.what type of tax to apply, how and where to collect the tax and present tax to consumers; 2. what types of beverages to tax; and 3. the amount of tax necessary to impact consumption/raise revenue) and includes examples of existing beverage taxes in the US and internationally. |

| Citation | Funder(s) | Conclusions |
|---|--------------------|--|
| <p>Finkelstein, E.A., Zhen, C., Bilger, M., Nonnemaker, J., Todd, J.E. (2013). Implications of a sugar-sweetened beverage (SSB) tax when substitutions to non-beverage items are considered. <i>J Health Econ</i>, 32.1, 219 - 239.</p> | <p>RWJF</p> | <p>Findings indicate that a 20% tax increase on SSBs would result in a decrease in store-bought energy of 24.3 kcal per day per person, which would translate into an average weight loss of 1.6 pounds during the first year and a cumulated weight loss of 2.9 pounds in the long run.</p> |
| <p>Fletcher, J., Frisvold, D., Tefft, N. (2013). Substitution patterns can limit the effects of sugar-sweetened beverage taxes on obesity. <i>Prev Chronic Dis</i>, 10:120195.</p> | <p>n/a</p> | <p>The authors posit that the effect on obesity of SSB taxes may be limited because people will substitute other high-calorie beverages for SSBs, but that taxes should nevertheless be considered as a public health measure. Taxes will likely reduce consumption, and therefore the intake of calories from SSBs (and sugar), and may encourage consumption of more healthful beverages (e.g., water and milk), and food without added sweeteners.</p> |
| <p>Franck, C., Grandi, S.M., Eisenberg, M.J. (2013). Taxing junk food to counter obesity. <i>Am J Prev Med</i>, 103, 1949 - 1953.</p> | <p>n/a</p> | <p>Small excise taxes will likely yield substantial revenue but are unlikely to decrease obesity rates. High excise taxes are likely to have a direct impact on weight in at-risk populations but might be unpopular and unsustainable. The effectiveness of earmarked health programs and subsidies is likely to be a key determinant of tax success in the obesity fight.</p> |
| <p>Powell, L.M., Chriqui, J.F., Khan, T., Wada, R., Chaloupka, F.J. (2013). 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. <i>Obes Rev</i>, 14.2, 110 - 128.</p> | <p>RWJF; NIDDK</p> | <p>A review of recent literature showed that SSBs are price elastic--a 10% increase in the cost of SSBs would result in a 12% decrease in consumption (price elasticity of demand: -1.21) but studies linking soda taxes to weight outcomes showed minimal impacts on weight. However, these studies were based on existing state-level taxes that were relatively low. The authors conclude that pricing instruments should continue to be considered and evaluated as potential policy instruments to address public health risks.</p> |

| Citation | Funder(s) | Conclusions |
|--|---|--|
| Zhang, Q., Jones, S., Ruhm, C.J., Andrews, M. (2013). Higher food prices may threaten food security status among American low-income households with children. <i>J Nutr</i> , 143, 1659 - 1665. | USDA/ERS | Although higher overall food prices were associated with increased risk of low and very low food security, increasing beverage prices (including soft drinks, orange juice and coffee) had a protective effect on food security status, even when controlling for general food prices. |
| Zhen, C., Finkelstein, E.A., Nonnemaker, J.M., Karns, S.A., Todd, J.E. (2013). Predicting the effects of sugar-sweetened beverage taxes on food and beverage demand in a large demand system. <i>Am J Agr Econ</i> , in press. | RWJF; NHLBI; NIH | A half-cent per ounce increase in SSB prices is predicted to reduce total calories from 23 packaged foods and beverages used in the calculations, but increase sodium and fat intakes as a result of product substitution. The predicted decline is larger for low-income households than for high-income, although welfare loss is also higher for low-income households. |
| Dharmasena, S., Capps Jr, O. (2012). Intended and unintended consequences of a proposed national tax on sugar-sweetened beverages to combat the U.S. obesity crisis. <i>Health Econ</i> , 21.6, 669 - 694. | AgriLife Research, Texas A&M University | Assuming an imposition of a 20% tax on SSBs, the potential reduction of body weight is between 1.54 and 2.55 lbs per year. |
| Lopez, R.A., Fantuzzi, K.L. (2012). Demand for carbonated soft drinks: implications for obesity policy. <i>Appl Econ</i> , 44, 2859 - 2865. | n/a | Taxes on SSBs could be effective in decreasing consumption but may have little impact on obesity. |
| Mytton, O., Clarke, D., Rayner, M. (2012). Taxing unhealthy food and drinks to improve health. <i>Brit Med J</i> , 344, e2931. | National Heart Forum (Britain) | Taxes on food and beverages could improve health but need to be at least 20% to have a significant effect. |

| Citation | Funder(s) | Conclusions |
|---|---|---|
| Pomeranz, J.L. (2012). Advanced policy options to regulate sugar-sweetened beverages to support public health. <i>J Public Health Pol</i> , 33, 75 - 88. | n/a | Policy options are available to governments to regulate sugar-sweetened beverages, including mandatory factual disclosures, earmarked taxation, and regulating sales, including placement within retail and food service establishments. |
| Rivard, C., Smith, D., McCann, S.E., Hyland, A. (2012). Taxing sugar-sweetened beverages: a survey of knowledge, attitudes and behaviors. <i>Pub Health Nutr</i> , 15.8, 1355 - 1361. | SRDR at Roswell Park Cancer Institute | A phone survey was conducted that, among other questions, asked respondents about the impact of a 20% SSB tax on their SSB consumption. Thirty-nine percent (39%) said they would cut back, 20% said they would switch to untaxed drinks, and 37% said it would have no impact. |
| Taber, D.R., Chriqui, J.F., Powell, L.M., Chaloupka, F.J. (2012). Banning all sugar-sweetened beverages in middle schools. <i>Arch Pediatr Adolesc Med</i> , 166, 256 - 262. | RWJF; National Heart, Lung, and Blood Institute | State policies that ban all SSBs in middle schools appear to reduce in-school access and purchasing of SSBs but do not reduce overall consumption. |
| Wang, C.Y., Coxson, P., Shen, Y., Goldman, L., Bibbins-Domingo, K. (2012). A penny-per-ounce tax on sugar-sweetened beverages would cut health and cost burdens of diabetes. <i>Health Affairs</i> , 31.1, 199 - 207. | American Heart Association, RWJF | A penny-per-ounce excise tax is estimated to reduce consumption by 15% among adults ages 25 - 64. Over the period 2010 - 20, the tax is estimated to prevent 2.4 million diabetes person-years, 95,000 coronary heart events, 8,000 strokes, and 26,00 premature deaths, as well as save more than \$17 billion in medical costs and generate approximately \$13 billion in annual tax revenue. |
| Andreyeva, T., Chaloupka, F.J., Brownell, K.D. (2011). Estimating the potential of taxes on sugar-sweetened beverages to reduce consumption and generate revenue. <i>Prev Med</i> , 52.6, 413 - 416. | Rudd Foundation; RWJF | An estimated 24% reduction in SSB consumption from a penny-per-ounce tax could reduce daily per capita caloric intake from 190 -200 cal to 145 - 150 cal, if there is no substitution to other caloric beverages or food. A national penny-per-ounce tax could generate new tax revenue of \$79 billion over 2010 - 2015. |
| Chaloupka, F.J., Wang, Y.C., Powell, L.M., Andreyeva, T., Chriqui, J.F., Rimkus, L.M. (2011). Estimating the potential impact of sugar-sweetened and other beverage excise taxes in Illinois. Chicago: Cook County Department of Public Health. | Department of Health and Human Services, Cook County Department of Public Health; Public Health Institute of Metropolitan Chicago | Researchers estimate that a penny-per-ounce tax in Illinois could result in the prevention of nearly 3,500 new cases of type 2 diabetes in 2011, an over \$20 million reduction in health care costs, an approximate 23.5% drop in consumption, the generation of more than \$600 million in revenue, and an average reduction in weight by approximately 1.7 pounds. |

| Citation | Funder(s) | Conclusions |
|---|-----------------|---|
| Lin, B-H., Smith, T.A., Lee, J-Y., Hall, K.D. (2011). Measuring weight outcomes for obesity intervention strategies: The case of a sugar-sweetened beverage tax. <i>Econ Hum Biol</i> , 9, 329 - 341. | n/a | Using dynamic versus static modeling, the researchers predict a much smaller reduction in body weight that could result from a 20% excise tax. The sizable revenue generated by an excise tax on SSBs could be used to research and design effective programs to reduce weight. |
| Nederkoorn, C., Havermans, R.C., Giesen, J.C.A.H., Jansen, A. (2011). High tax on high energy dense foods and its effects on the purchase of calories in a supermarket. An experiment. <i>Appetite</i> , 56, 760 - 765. | n/a | A tax on high energy dense (HED) foods resulted in the purchase of fewer calories, particularly from HED foods. A 50% increase in the price of HED products led to a 16% reduction of purchases. |
| Zhen, C., Wohlgenant, M.K., Karns, S., Kaufman, P. (2011). Habit formation and demand for sugar-sweetened beverages. <i>Am J Agric Econ</i> , 93.1, 175 - 193. | USDA | A half-cent per ounce tax on store-purchased SSBs are predicted to result in a moderate reduction in consumption of SSBs for both high-income and low-income households. |
| Andreyeva, T., Long, M.W., Brownell, K.D. (2010). The impact of food prices on consumption: A systematic review of research on price elasticity of demand for food. <i>Am J Pub Health</i> , 100.2, 216 - 222. | Rudd Foundation | Price elasticities of demand for certain foods provides opportunities to influence consumption. Data on price elasticities can help develop policies that might have the greatest impact on consumer food choices, nutrition and health. |
| Block, J.P., Chandra, A. McManus, K.D., Willett, W.C. (2010). Point-of-purchase price and education intervention to reduce consumption of sugary soft drinks. <i>Am J Pub Health</i> , 100.8, 1427 - 1433. | RWJF | Increasing the price of regular soft drinks resulted in a 26% decline in sales. Combining education with a price increase resulted in an additional 18% decline. Education alone had no effect on sales. |

| Citation | Funder(s) | Conclusions |
|--|---|---|
| Epstein, L.H., Dearing, K.K., Roba, L.G., Finkelstein, E. (2010). The influence of taxes and subsidies on energy purchased in an experimental purchasing study. <i>Psychol Sci</i> , 21.3, 1 - 9. | School of Medicine and Biomedical Sciences, University at Buffalo, Buffalo, NY; Duke-NUS Graduate Medical School, Singapore | Taxing less healthy foods with low nutrient density reduced the total energy/calories purchased in a shopping day, in addition to reducing the proportion of fat, and increasing the proportion of protein purchased by mothers. |
| Finkelstein, E.A., Zhen, C., Nonnemaker, J., Todd, J.E. (2010). Impact of targeted beverage taxes on higher- and lower-income households. <i>Arch Intern Med</i> , 170.22, 2028 - 2034. | RWJF | Large taxes on SSBs have the potential to positively influence weight outcomes, especially for middle-income households. These taxes would also generate substantial revenue that could be used to fund obesity prevention programs or for other causes. |
| Fletcher, J.M., Frisvold, D., Tefft, N. (2010). Taxing soft drinks and restricting access to vending machines to curb child obesity. <i>Health Aff</i> , 29.5, 1059 - 1066. | RWJF; Emory Global Health Institute | In reviewing current policies on taxation of SSBs and restrictions on vending machine access, neither are effective in affecting children's weight outcomes. The authors suggest that taxes must be larger than the current sales taxes and policies regarding access to SSBs must be comprehensive in order to be effective. |
| Smith, T.A., Lin, B.H., Lee, J.Y. (2010). Taxing calorie sweetened beverages: Potential effects on beverage consumption, calorie intake, and obesity. <i>USDA Economic Research Report</i> , 100, 1 - 23. | USDA-ERS Cooperative Agreement | A tax-induced 20% price increase on caloric sweetened beverages is estimated to cause an average reduction of 37 calories per day, or 3.8 pounds of body weight over a year, for adults and an average of 43 calories per day, or 4.5 pounds over a year, for children. |
| Brownell, K.D., Farley, T., Willett, W.C., Popkin, B.M., Chaloupka, F.J., Thompson, J.W., Ludwig, D.S. (2009). The public health and economic benefits of taxing sugar-sweetened beverages. <i>New Eng J Med</i> , 361, 1599 - 1606. | Rudd Foundation; NIH; RWJF | There are compelling reasons to tax SSBs: 1) escalating health care costs and the rising burden of diseases related to poor diet create an urgent need for solutions; 2) research to date suggests that an SSB tax would have strong positive effects on reducing consumption; and 3) taxes could generate substantial revenue to prevent obesity and address other external costs. |
| Finkelstein, E. A., Trogon, J.G., Cohen, J.W., Dietz, W. (2009). Annual medical spending attributable to obesity: payer- and service- specific estimates. <i>Health Aff</i> , 28.5, 822 - 831. | CDC Foundation | In 1998 estimates for obesity were approximately \$78.5 billion or 6.5% of health expenditures, with roughly half financed by Medicare/Medicaid. A newer analysis found that in 2006 - 2008 obesity was responsible for \$147 billion or 9.1% of health expenditures, with roughly half financed by Medicare/Medicaid. |

| Citation | Funder(s) | Conclusions |
|--|---|--|
| Powell, L.M. and Chaloupka, F.J. (2009). Food prices and obesity: Evidence and policy implications for taxes and subsidies. <i>Milbank Q</i> , 87, 229 - 257. | University of Illinois at Chicago | While small taxes or subsidies are not likely to decrease BMI significantly, larger taxes might have a measureable effect on American's weight, particularly for children, adolescents, low socio-economic status populations, and those most at risk for becoming overweight. |
| Powell, L., Chriqui, J., Chaloupka, F.J. (2009). Associations between state-level soda taxes and adolescent body mass index. <i>J Adol Health</i> , 45.3, S57 - S63. | RWJF; National Institute on Drug Abuse | Current state-level tax rates are not linked to a decrease in adolescent weight. Taxes would need to be raised substantially in order to detect an association. |
| Williams, R. and Christ, K. (2009). Mercatus on Policy No. 52 -- Taxing Sin: Are Excise Taxes Efficient? Fairfax, VA: George Mason University. | The Mercatus Center, George Mason University | Taxing SSBs to reduce obesity and raise revenue to fund obesity-prevention programs is problematic because 1) soft drink consumption is a small part of overweight people's diets; 2) substitutes for SSBs may be highly caloric; 3) governments may not spend the revenue on obesity prevention; and 4) the burden of taxation would likely fall disproportionately on the poor. |
| Chriqui, J., Eidson, S.S., Bates, H., Kowalczyk, S., Chaloupka, F.J. (2008). State sales tax rates for soft drinks and snacks sold through grocery stores and vending machines, 2007. <i>J Pub Health Pol</i> , 29, 226 - 249. | RWJF; MayaTech Corporation | In 2007, forty states imposed a sales tax on soft drinks; several were higher than the "standard" taxes rate (therefore called "disfavored"). Chicago is the only metropolitan area with a specific tax on soft drinks. An excise tax, if levied, would be an additional tax, on top of the sales tax. The only state-level taxes on soft drinks are sales taxes. All state excise taxes were repealed by the early 2000s. |
| Congressional Budget Office (CBO). (2008). Budget Options, Volume 1: Health Care. Washington, D.C.: Congressional Budget Office (Option 106). | Congress of the United States | In 2008, the CBO estimated that a federal excise tax of \$.03 per 12 ounces of SSBs would generate approximately \$24 billion over the 2009 - 2013 period and \$50 billion over the 2009 - 2018 period. |
| Schroeter, C., Lusk, J., Tyner, W. (2008). Determining the impact of food price and income changes on body weight. <i>J Health Econ</i> , 27.1, 45 - 68. | College of Agriculture, Arkansas State University; Department of Agricultural Economics, Oklahoma State University; Department of Agricultural Economics, Purdue University, West Lafayette, IN | This study suggests that a tax on caloric soft drink will likely decrease body weight. |

| Citation | Funder(s) | Conclusions |
|--|---|---|
| Caraher, M. & Cowburn, G. (2005). Taxing food: implications for public health nutrition. <i>Public Health Nutr</i> , 8.8, 1242 - 1249. | The Centre for Food Policy, Institute of Health Sciences, City University, London; BHF Health Promotion Research Group, Department of Public Health, University of Oxford | Small taxes with the clear purpose of promoting the health of key groups, e.g. children, are more likely to receive public support. |
| Finkelstein, E.A., Ruhm, C.J., Kosa, K.M. (2005). Economic causes and consequences of obesity. <i>Ann Rev Public Health</i> , 26, 239 - 257. | RTI International; Bryan School, University of North Carolina, Greensboro | Obesity is costly and financed mostly by taxpayers, which is a rationale for government intervention. However, because obesity may result from poor information and addictive behavior and/or as a result of living in an obesogenic environment, interventions will need to be multifaceted to ensure success. |
| Cawley, J. (2004). An economic framework for understanding physical activity and eating behaviors. <i>Am J Prev Med</i> , 27, 117 - 125. | Department of Policy Analysis and Management, Cornell University, Ithaca, NY; Partnership to Promote Healthy Eating and Active Living, Boston, MA | From an economic standpoint, interventions to reduce obesity are justified if there are 'market failures,' i.e., the production or use of goods is not optimal or efficient. There are three broad market failures under which SSB consumption falls, suggesting the need for policy intervention: 1) information deficits; 2) externalities; and 3) a lack of rationality. |
| Yen, S.T., Lin, B-H., Smallwood, D.M., Andrews, M. (2004). Demand for nonalcoholic beverages: The case of low income households. <i>Agribusiness</i> , 20.3, 309 - 321. | USDA-ERS Cooperative Agreement | Soft drinks have replaced milk at home in part because they are lower-priced. This suggests that raising the price of soft drinks through such methods as taxes can be effective in curtailing soft drink consumption and promoting milk consumption. |
| Bahl, R., Bird, R., Walker, M.B. (2003). The uneasy case against discriminatory excise taxation: Soft drink taxes in Ireland. <i>Public Financ Rev</i> , 1.5, 510 - 533. | Andrew Young School of Policy, Georgia State University; International Tax Program, Rotman School of Management, University of Toronto | A 10% increase in the price of soft drinks could lead to an 11% decrease in the number of liters consumed. |
| State snack and soda sales tax data (http://www.impactteen.org/obesitystatedata.htm) | RWJF; MayaTech Corporation | As of January 2009, 33 states have sales taxes on soft drinks at an average rate of 5.2%. |

For more information, contact Roberta Friedman, ScM, Director of Public Policy, Rudd Center for Food Policy and Obesity, Yale University, 309 Edwards Street, Box 208369 New Haven, CT 06520, Ph: (203) 432-4717, Fax: (203) 432-9674, roberta.friedman@yale.edu, www.yaleruddcenter.org

Updated 11/21/13