

MAY 2009

# RUDD REPORT



## SOFT DRINK TAXES

### A Policy Brief

309 Edwards Street, New Haven, CT 06520-8369 ■ 203 432 6700 ■ fax 203 432 9674 ■ [rudd.center@yale.edu](mailto:rudd.center@yale.edu)

# SOFT DRINK TAXES

## Why Consider Them?

Sugar-sweetened beverages with little or no nutrition are staples of today's American diet. These beverages are inexpensive, in abundant supply, and appeal to our taste for sugar. They are heavily marketed, especially to children, often using celebrities, sports stars, and cartoon characters. More than for any category of foods, rigorous scientific studies have shown that consumption of soft drinks is associated with poor diet, increasing rates of obesity, and risk for diabetes. These links are strong for children.

Chronic diseases related to poor diet cost the country billions of health care dollars each year and are complex problems which must be addressed with multi-faceted strategies. Taxing certain classes of products to reduce consumption has been proposed as one such strategy.

Policy makers across the country who are concerned about nutrition are considering the implementation of soft drink taxes to complement other public health initiatives.

As of 2007, 40 states imposed small sales taxes on soft drinks and/or snacks. The rates are highest for soft drinks and for items purchased in vending machines.<sup>1</sup>

This Rudd Report gives policy makers and interested citizens key information to determine whether such taxes are a viable alternative for their constituents and communities.

It provides:

- a summary of research which addresses concerns of policy makers and citizens;
- policy recommendations;
- arguments used by proponents and opponents of taxes.

## What Would These Taxes Accomplish?

Taxes on soft drinks that contribute to poor nutrition and obesity can be conceived with two goals: raising revenue and changing consumption. They can:

- raise considerable funds to be earmarked for nutrition initiatives such as subsidies of healthy foods or programs in schools;

- raise the relative price of unhealthy beverages thereby discouraging their consumption;
- decrease sales of those beverages, and influence demand for healthier alternatives, which may encourage beverage manufacturers to reformulate their products;
- convey a message that government and policy makers are concerned about nutrition and the public's health.

## Issues Concerning Soft Drink Taxes and Synopses of Scientific Research

### ISSUE: CONSUMPTION AND HEALTH EFFECTS

A substantial increase has occurred in the consumption of soft drinks since the 1970s.

### FINDINGS

#### Consumption

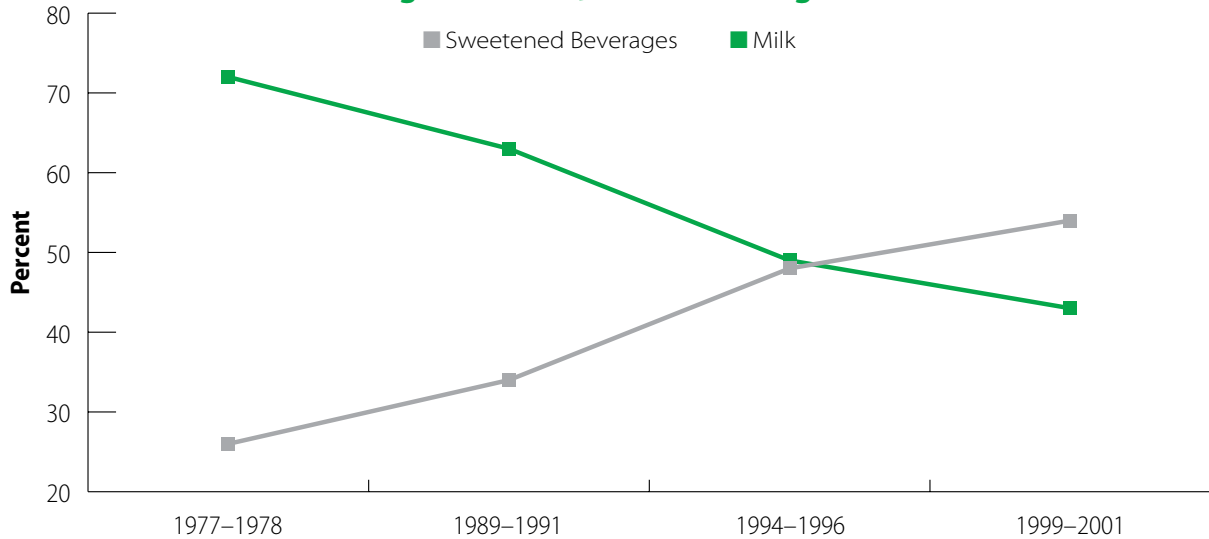
- A 2004 study found that soft drinks are the single largest contributor of energy intake in the United States.<sup>5</sup>
- U.S. per capita daily consumption of calories from sugar-sweetened beverages rose by nearly 30% in the past decade alone.<sup>6</sup> Further, traditional carbonated drinks are losing market share, while beverages like sports drinks, energy drinks, and sweetened waters and teas are showing significant growth in the marketplace.<sup>7</sup>

### REVENUE POTENTIAL

- A very small national tax, 1 cent per 12-ounce soft drink, would generate at least \$1.5 billion annually.<sup>2</sup> Placing this in context, this is triple the amount the nation's largest funder of work on childhood obesity is spending in five years. A steeper tax of 7 cents per 12 ounces could generate about \$10 billion per year.<sup>3</sup>
- A proposed sales tax of 18% on soft drinks in New York State was projected to bring in \$400 million in the first year and close to \$540 million thereafter.<sup>4</sup>



## Percentage of Beverage Calories from Sweetened Beverages and Milk, for Children Ages 2–18



- The percentage of beverage calories from sweetened beverages consumed by 2-18 year olds has increased, while the percentage from milk has decreased. In the mid-1990s the intake of sugared beverages began surpassing that of milk.<sup>8</sup>
- Sugar-sweetened beverage consumption is highest among groups that are at greatest risk of obesity and type 2 diabetes.<sup>9</sup>
- Research suggests that people compensate less well for calories that come in beverages compared to calories in solid food; hence the large increase in calories from beverages is a matter of great concern.<sup>10</sup>

### Effects on Health

- For children, each extra can or glass of sugar-sweetened beverage consumed per day increases their chance of becoming obese by 60%.<sup>11</sup>
- A 2009 study found a reduction of sugar-sweetened beverage intake was significantly associated with weight change. One fewer serving per day resulted in the loss of more than one

pound of weight at 6 months, and 1.4 pounds at 18 months.<sup>12</sup>

- Women who regularly consume sugar-sweetened beverages have a higher risk of coronary heart disease.<sup>13</sup>
- Systematic reviews of evidence conclude that greater consumption of sugar-sweetened beverages is associated with increased calorie intake, weight gain, diabetes, and obesity.<sup>14</sup> Papers not showing this effect are generally funded by the beverage or sugar industries.

## ISSUE: PRICE

Price changes affect purchases and consumption.

## FINDINGS

### Effect on Purchase and Consumption

- Based on the best estimates to date of the responsiveness of demand for soft drinks to changes in price,<sup>15</sup> a 10% tax could result in about an 8% reduction in consumption. The effects could be higher for heavy users of soft drinks.<sup>16</sup>

- Based on November 2008 price increase and volume sales information on Coca Cola and Pepsi sales in the U.S.,<sup>17</sup> demand for soda is “elastic” (-1.15) meaning that a 10% tax would reduce consumption by 11.5%.
- Price interventions can be effective in curtailing at-home soft drink consumption, and promoting milk consumption.<sup>18</sup>
- Experiments show that decreasing the cost of healthy foods relative to that of less-healthy foods is effective in promoting the purchase of healthy items.<sup>19</sup>

## ISSUE: TAXING

Taxing alcohol and cigarettes has proven to be highly successful in reducing consumption.

## FINDINGS

- Numerous economic studies conclude that every 10% increase in the real price of cigarettes reduces consumption by:



- 3 to 5% overall;
- 3.5% among young adult smokers;
- 6 to 7% among children.<sup>20</sup>
- A 2009 systematic review of 112 studies of alcohol taxes or price effects establishes that increasing prices of alcohol is an effective means to reduce drinking.<sup>21</sup>

## ISSUE: PUBLIC SUPPORT

Will the public support soft drink taxes?

## FINDINGS

- Taxes whose revenue is clearly earmarked to promote the health of key groups (such as children) are most likely to receive public support.<sup>22</sup>
- Public support varies significantly depending on how the poll questions are phrased.
  - A December 2008 poll of New Yorkers found lower support (31%) for an “obesity” or “fat” tax.<sup>23</sup>
  - In contrast, another December 2008 poll found that 52% of New Yorkers supported a “soft drink” tax. That number rose to 72% when respondents were informed that the revenue raised would be earmarked for obesity prevention among children and adults.<sup>24</sup>
- A 2008 study found that New York State residents would be willing to pay \$690.6 million per year if it meant a 50% reduction in childhood obesity. When applied to the entire U.S., the number increases to \$10.6 billion.<sup>25</sup>
- Support has increased over time: a 2003 national survey found that 41% percent supported a special tax on “junk food.”<sup>26</sup>

# Policy Recommendations

## TAX CONSIDERATIONS

- Excise tax (fee per ounce)
  - *Advantages*
    - can be imposed at the bottler, distributor, wholesaler, or importer level, making it easier to collect;
    - does not change if industry reduces prices;
    - generates more stable and predictable revenues;
    - avoids the problem of encouraging consumers to buy larger containers.
  - *Disadvantage*
    - if the goal is raising revenue, excise fees do not rise with inflation.
- Sales tax (percentage of product’s price).
  - *Advantages*
    - likely to have beneficial effects on consumption;
    - rises with inflation.
  - *Disadvantages*
    - may encourage consumers to buy larger containers because the cost per ounce is lower, so the tax per ounce would be lower as well;
    - retailers, especially small ones without computerized cash registers, may be inconvenienced by having to charge taxes on some beverages and not others. This may motivate them to become spokespersons for opposition or repeal.

In states where sales taxes are lower for groceries than for other goods, soft drinks should be taxed just like other consumer goods and not given a special lower rate reserved for food necessities.<sup>27</sup>

- Exempting diet beverages from taxes
  - *Advantage*
    - may encourage consumers to switch to diet or “light” beverages. This may be beneficial in combating weight gain, although there is inconclusive evidence about the role that artificial sweeteners play in obesity prevention<sup>28</sup> or overall health.
  - *Disadvantages*
    - may make administering the tax more complicated;
    - generates less revenue.

## PUBLIC HEALTH MESSAGE

- Make the public health message explicit to increase public support for a tax: the purpose is to fund nutrition programs and obesity prevention, and to reduce consumption of unhealthy products.
- Note that the tax is not just directed at obesity. Poor nutrition affects the health of everyone, overweight or not. In addition, children can develop habits and brand loyalties well in advance of becoming overweight.

## USE OF THE REVENUE

- Earmark the revenue for new public health nutrition and physical activity initiatives which will be publicly favored, or similar programs that might be cut. Such initiatives could include:
  - subsidies of fresh fruits and vegetables and other healthy foods:
    - in schools and communities;
    - for food stamp recipients, which can offset concerns that the tax is regressive;
  - school initiatives:
    - incentive programs to improve all foods sold on school grounds;
    - funding for schools to meet national physical education time standards;
    - farm-to-school grants;
    - fully subsidize breakfast and lunch for low-income students;
    - safe routes to schools;
  - statewide, comprehensive obesity prevention programs;
  - improvements to the built environment for increased physical activity;
  - incentives to attract supermarkets to low income neighborhoods;
  - social marketing campaigns to counteract the marketing strategies used by food industries to advertise soft drinks and snacks to children.

## OTHER CONSIDERATIONS:

- Define “soft drinks” as soda, sports drinks, sweetened teas, vitamin waters, and fruit drinks with less than 100% juice.
- Create “disfavored” tax statuses for soft drinks, making them higher than general food taxes.

**The Rudd Center for Food Policy and Obesity** at Yale University is directed by **Kelly D. Brownell, PhD**, and seeks to improve the world’s diet, prevent obesity, and reduce weight stigma by establishing creative connections between science and public policy.

**Tatiana Andreyeva, PhD**, is Director of Economic Initiatives at the Rudd Center. [Tatiana.andreyeva@yale.edu](mailto:Tatiana.andreyeva@yale.edu)

**Roberta R. Friedman, ScM**, Director of Public Policy, prepared this report. [Roberta.friedman@yale.edu](mailto:Roberta.friedman@yale.edu); (203) 432-4717

# ARGUMENTS FOR AND AGAINST SOFT DRINK TAXES

## Opponents say:

**Soft drink taxes are regressive.** They will disproportionately hurt the poor and minorities who spend a larger proportion of their income on food.

**The government should stay out of private behavior.** It should not try to regulate what people eat or drink.

**Soft drink taxes can't be compared to cigarette and alcohol taxes.** The use of tobacco and alcohol can have adverse consequences for non-users (for example, second hand smoke, and drunk driving accidents, called "negative externalities"). This is not true for soft drink consumption.

**People who consume too many soft drinks know they risk becoming overweight.** Everyone else shouldn't have to bear the burden of their bad decisions.

**These taxes will jeopardize jobs.**

## Proponents say:

- **Soft drink taxes have the potential to be most beneficial to low income people, who:**
  - may currently consume more soft drinks;
  - may be more sensitive to higher prices and therefore stand to benefit most from reducing consumption.

This is especially true if the revenues are used for programs that will benefit the poor, or for subsidies on healthier foods which can offset concerns that the tax is regressive.

- While everyone must eat, sugared beverages are not a necessary part of the diet and generally deliver many calories with little or no nutrition.
- It is generally agreed that while it is good public policy for the tax system as a whole to be progressive, it would not be good policy to expect that every single sales tax should be progressive.<sup>29</sup>

- The government is already deeply involved in what we eat, from farm subsidies to setting nutritional standards for school meals. Historically, major government interventions have been successful in improving and protecting the public's health. Examples include smoking restrictions and tobacco taxes, mandated seat belt usage, fluoridated water, and vaccinations.
- It is important to also consider change in government policies that may be encouraging the consumption of sugar-sweetened beverages. Agriculture subsidies that support the production of high fructose corn syrup, and USDA policies on what can be sold in schools are examples.
- Some states and cities have lower sales taxes on foods than other products by virtue of food being a necessity. Policies could define sugared beverages as non-necessities so they would not qualify for lower rates.

**Sugared beverage intake also results in externalities.** Because of the relationship of soft drink intake with negative health outcomes in both children and adults, health care costs rise. For example, obesity-related medical expenditures were estimated in 2002 to be \$92 billion, half of which were paid for with taxpayer dollars through Medicaid and Medicare.<sup>30</sup>

**Consumers, especially young ones, may not know the risks involved in over-consumption of soft drinks or calories. For example:**

- People may not be aware that a 20-ounce bottle of Coca Cola has more than 15 teaspoons of sugar and 240 calories.
- Most people cannot estimate the number of calories in a fast food meal. Even experienced nutritionists underestimate the numbers.
- Overweight and obese children are more likely to become obese adults and suffer from related chronic diseases.

The public may also not be aware that in 2006 manufacturers spent about \$1.62 billion to market soft drinks, snacks, and other unhealthy foods, just to children and adolescents and just in the U.S. Approximately \$870 million of that was spent on advertising to children under 12.<sup>31</sup>

**Soft drink taxes could shift consumer demand,** forcing the industry to reformulate its products to be healthier, rather than to downsize and cut jobs. Tobacco taxes did not cause long-term job loss.

# FOOTNOTES

- 1 Chriqui, J., Eidson, S., Bates, H., Kowalczyk, S., & Chaloupka, F. (2008). State sales tax rates for soft drinks and snacks sold through grocery stores and vending machines, 2007. *Journal of Public Health Policy*, 29, 226–249.
- 2 Jacobson, M., & Brownell, K. D. (2000). Small taxes on soft drinks and snack foods to promote health. *American Journal of Public Health*, 90(6), 854–857.
- 3 Jacobson, M. Personal communication, March 4, 2009.
- 4 New York State Division of the Budget, 2009–2010. <http://publications.budget.state.ny.us/eBudget0910/fy0910littlebook/RevenueActions.html> (accessed February 3, 2009).
- 5 Block, G. (2004). Foods contributing to energy intake in the US: Data from NHANES III and NHANES 1999–2000. *Journal of Food Consumption and Analysis*, 17, 439–447.
- 6 Bleich, S. N., Wang, Y. C., Wang, Y., & Gortmaker, S. L. (2009). Increasing consumption of sugar-sweetened beverages among US adults: 1988–1994 to 1999–2004. *American Journal of Clinical Nutrition*, 89, 372–381.
- 7 “Soft-drink sales slip, accelerated drop due to price hikes, fickle consumers.” *Convenience Store/Petroleum Daily News*, March 14, 2008. <http://www.cspnet.com> (accessed February 18, 2009).
- 8 Nielsen, S. J., & Popkin, B. M. (2004). Changes in beverage intake between 1977 and 2001. *American Journal of Preventive Medicine*, 27(3), 205–210.
- 9 Bleich, S. N., op. cit.
- 10 DiMeglio, D. P., & Mattes, R. D. (2000). Liquid versus solid carbohydrate: Effects on food intake and body weight. *International Journal of Obesity*, 24(6), 794–800; Raben, A., Vasilaras, T. H., Moller, A. C., & Astrup, A. (2002). Sucrose compared with artificial sweeteners: Different effects on ad libitum food intake and body weight after 10 weeks of supplementation in overweight subjects. *American Journal of Clinical Nutrition*, 76(4), 721–729; Tordoff, M. G., & Alleva, A. M. (1990). Effect of drinking soda sweetened with aspartame or high-fructose corn syrup on food intake and body weight. *American Journal of Clinical Nutrition*, 51, 963–969; Van Wymelbeke, V., Beridot-Therond, M. E., de La Gueronniere, V., & Fantino, M. (2004). Influence of repeated consumption of beverages containing sucrose or intense sweeteners on food intake. *European Journal of Clinical Nutrition*, 58, 154–161.
- 11 Ludwig, D. S., Peterson, K. E., & Gortmaker, S. L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *The Lancet*, 357(9255), 505–508.
- 12 Chen, L., Appel, L. J., Loria, C., Lin, P., Champagne, C. M., Elmer, P. J., et al. (2009). Reduction in consumption of sugar-sweetened beverages is associated with weight loss: the PREMIER trial. *American Journal of Clinical Nutrition*, 89(5), 1299–1306.
- 13 Fung, T. T., Malik, V., Rexrode, K. M., Manson, J. E., Willett, W. C., & Hu, F. B. (2009). Sweetened beverage consumption and risk of coronary heart disease in women. *American Journal of Clinical Nutrition*, 89, 1–6.
- 14 Vartanian, L. R., Schwartz, M. B., & Brownell, K. D. (2007). Effects of soft drink consumption on nutrition and health: A systematic review and meta-analysis. *American Journal of Public Health*, 97(4), 667–675; Malik, V. S., Schulze, M. B., & Hu, F. B. (2006). Intake of sugar-sweetened beverages and weight gain: a systematic review. *American Journal of Clinical Nutrition*, 84(2), 274–288.
- 15 Andreyeva, T., Long, M. W., & Brownell, K. D. (2008). The impact of food prices on consumption: A systematic review of research on price elasticity of demand for food. Paper under review; Yen, S. T., Lin, B., Smallwood, D. M., & Andrews, M. (2004). Demand for nonalcoholic beverages: The case of low-income households. *Agribusiness*, 20(3), 309–321.
- 16 Gustavsen, G. W., & Rickertsen, K. Public policies and the demand for carbonated soft drinks. Working paper. 2005
- 17 Beverage Digest, November 21, 2008, pp 3–4.
- 18 Yen, S. T., op. cit.
- 19 French, S. A. (2003). Pricing effects on food choices. *Journal of Nutrition*, 133(3), 841S–843; French, S. A., Jeffery, R. W., Story, M., Hannan, P., & Snyder, M. P. (1997). A pricing strategy to promote low-fat snack choices through vending machines. *American Journal of Public Health*, 87(5), 849–851; French, S., Jeffery, R., Story, M., Breitlow, K., Baxter, J., Hannan, P., et al. (2001). Pricing and promotion effects on low-fat vending snack purchases: the CHIPS Study. *American Journal of Public Health*, 91(1), 112–117; Epstein, L. H., Dearing, K. K., Paluch, R. A., Roemmich, J. N., & Cho, D. (2007). Price and maternal obesity influence purchasing of low- and high-energy-dense foods. *American Journal of Clinical Nutrition*, 86(4), 914–922.
- 20 Campaign for Tobacco-Free Kids Fact Sheet. (Updated 01.09.09) Raising cigarette taxes reduces smoking, especially among kids. <http://www.tobaccofreekids.org/research/factsheets/index.php?CategoryID=18> (accessed February 4, 2009).
- 21 Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104(2), 179–190.
- 22 Caraher, M., & Cowburn, G. (2007). Taxing food: Implications for public health nutrition. *Public Health Nutrition*, 8(08), 1242–1249; Jacobson, M. & Brownell, K., op. cit.
- 23 Quinnipiac University Polling Institute. Public opinion poll conducted December 2009. <http://www.quinnipiac.edu/x1302.xml?ReleaseID=1253> (accessed February 4, 2009).
- 24 Citizens’ Committee for Children of New York, Inc. Public opinion poll conducted by Beck Research, LLC. Voter preferences for closing the New York State budget gap. December 15, 2009. <http://www.cccnewyork.org/publications/12-12-08CCCPoll.pdf> (accessed February 4, 2009).
- 25 Cawley, J. (2008). Contingent valuation analysis of willingness to pay to reduce childhood obesity. *Economics and Human Biology*, 6, 281–292.
- 26 Obesity as a public health issue: a look at solutions. Washington, D.C.: Lake Snell Perry, June 11, 2003. [http://www.phsi.harvard.edu/health\\_reform/poll\\_results.pdf](http://www.phsi.harvard.edu/health_reform/poll_results.pdf) (accessed March 25, 2009).
- 27 U.S. Food Policy: A Public Perspective blog. <http://usfoodpolicy.blogspot.com/>. Comment posted March 2, 2009 by Parke Wilde.
- 28 Mattes, R. D., & Popkin, B. M. (2009). Nonnutritive sweetener consumption in humans: effects on appetite and food intake and their putative mechanisms. *American Journal of Clinical Nutrition*, 89, 1–14.
- 29 U.S. Food Policy: A Public Perspective blog. op. cit.
- 30 Finkelstein, E. A., Fiebelkorn, I. C., & Wang, G. (2003). National medical expenditures attributable to overweight and obesity: How much, and who’s paying? *Health Affairs*, 22(4), 8.
- 31 Federal Trade Commission Report to Congress (July 2008). Marketing food to children and adolescents. A review of industry expenditures, activities and self-regulation. <http://www.ftc.gov/os/2008/07/P064504foodmktngreport.pdf> (accessed February 4, 2009).

