



## Sugar-Sweetened Beverages, Obesity, and Chronic Disease Fact Sheet

### What are Sugar-Sweetened Beverages?

- Sugar-sweetened beverages (SSBs) include any beverage to which a caloric sweetener (any type of sugar) has been added.
- These beverages include: soda, other carbonated soft drinks, juice drinks, sports drinks, energy drinks, sweetened milk or milk alternatives, and sweetened tea or coffee drinks.
- There are many kinds of sugar. Look for one or more of these words on the ingredient list: high-fructose corn syrup, fruit juice concentrate, glucose, sucrose, honey, brown sugar, cane sugar, dextrose and corn sweetener.
- Most sugar-sweetened beverages add calories without providing any nutritional benefit.
- A typical 20-ounce soda contains about 16 teaspoons of sugar and 250 calories.
  - To burn off these calories, the average adult would have to walk at a brisk pace for 45 minutes.

### How much sugar do we drink?

- Americans consume about 250–300 more calories daily than several decades ago. Nearly half of this increase is due to increased intake of SSBs.<sup>1</sup>
- In 2005-06, the US per capita intake of SSBs was 172 calories for children and 175 calories for adults.<sup>2</sup> That's 11-12 teaspoons of sugar per day for every US resident. Some individuals drink less, and many drink more.
- The average US intake each year of carbonated soft drinks alone is about 46 gallons per person.<sup>3</sup> (This figure does not include other sugar-sweetened beverages.)
- On an average day, 63% of adults<sup>4</sup> and 80% of youth drink an SSB.<sup>5</sup>
- People don't compensate for consuming calories through beverages by eating less solid food, probably because fluids don't contribute to a feeling of 'fullness'.<sup>6</sup> So SSBs are an added layer of extra calories, with no associated nutritional value.
- The American Heart Association recommends that the *maximum* daily intake of added sugars from all sources be 6-9 teaspoons per day.<sup>7</sup>
- Sugar has no nutrients and is not necessary for health. A diet rich in fruits, vegetables, whole grains, lean protein and low-fat dairy products provides sufficient daily calories.
- The beverage industry spent over \$3 billion in 2008 in the US to promote consumption of carbonated beverages.<sup>8</sup>

### What is the health impact of SSB consumption?

- Numerous studies indicate that higher intake of SSBs leads to an increased risk of gaining weight<sup>9</sup> and also of developing type 2 diabetes,<sup>10</sup> heart disease,<sup>11</sup> metabolic syndrome,<sup>12</sup> and gout.<sup>13</sup>
- Several large meta-analyses have found that SSB intake was significantly associated with weight gain and obesity.<sup>14,15</sup> Studies funded by the food industry have reported significantly smaller health impact of SSB consumption than non-industry-funded studies.

- A large meta-analysis found that adults with highest intakes of SSBs were 26% more likely to develop diabetes and 20% more likely to develop metabolic syndrome than those with the lowest intakes.<sup>16</sup>
- Women who drink one or more SSB daily had almost twice the risk of developing diabetes as those who drank less than one SSB daily.<sup>17</sup>
- Among adults, for each additional SSB consumed daily, blood pressure was significantly higher, even when adjusting for body mass index.<sup>18</sup>
- A child's risk of becoming obese increased 60% with every additional SSB consumed daily.<sup>19</sup>
- Young children who drank carbonated SSBs had almost double the risk of dental caries.<sup>20,21</sup>

#### **How much of a problem is obesity in Boston and the US?**

- In 2008, 54% of Boston adults were obese (23%) or overweight (31%).
- Black residents (32%) and Latino residents (30%) in Boston experience nearly double the obesity prevalence of White residents (17%).<sup>22</sup> Communities of color are exposed to more advertising of obesity-promoting activities and food, including sugar-sweetened beverages.<sup>23</sup>
- 44% of Boston Public School students are overweight or obese.<sup>24</sup>
- In the past thirty years, US obesity prevalence has doubled among adults<sup>25</sup> and tripled among children.<sup>26</sup>

#### **What is the impact of type-2 diabetes in Boston and the US?**

- The increase in type-2 diabetes, a disease where the body cannot properly regulate blood sugar, is closely connected to the obesity epidemic. Type-2 diabetes can be dangerous if undetected or poorly controlled, leading to blindness, kidney failure, lower limb amputation, heart attack, stroke, impotence, and premature death.
- In 2008, six percent of Boston adults reported having diabetes.<sup>27</sup>
- In 2008, 13% of obese Boston adults reported having diabetes, compared to just 2% of normal or underweight adults.
- Like many diseases, diabetes especially affects people of color. The 2008 diabetes-related death rate for Black residents was nearly three times the rate for White residents, while the rate for Latino residents was more than twice the rate for White residents.<sup>28</sup> More than 90% of these deaths are preventable, and reduction of SSB's is one of the important steps to take.

#### **How does the obesity epidemic affect everyone?**

- Annual medical costs for an obese patient are more than \$1400 higher than for a patient at a healthy weight.
- In 2008, obesity-related health care costs were \$147 billion, more than 9% of all medical costs. About half of these costs were paid through public expenditures.<sup>29</sup>

## Sugar-Sweetened Beverages, Obesity, and Chronic Disease Fact Sheet References

- 1 Brownell KD, Frieden TR. Ounces of prevention--the public policy case for taxes on sugared beverages. *N Engl J Med*. 2009 Apr 30;360(18):1805-8.
- 2 Brownell KD, Farley T, Willett WC, Popkin BM, Chaloupka FJ, Thompson JW, Ludwig DS. The public health and economic benefits of taxing sugar-sweetened beverages. *N Engl J Med*. 2009 Oct 15;361(16):1599-605
- 3 O'Leary N. "Soft-Drink consumption Continues to Decline." *Brandweek*. 2010 Mar 30.  
<[http://www.brandweek.com/bw/content\\_display/news-and-features/packaged-goods/e3iedc670800607df6c191cf7d4164ab322](http://www.brandweek.com/bw/content_display/news-and-features/packaged-goods/e3iedc670800607df6c191cf7d4164ab322)>
- 4 Bleich SN, Wang YC, Wang Y, Gortmaker SL. Increasing consumption of sugar-sweetened beverages among US adults: 1988-1994 to 1999-2004. *Am J Clin Nutr*. 2009;89(1):372-381.
- 5 Wang YC, Bleich SN, Gortmaker SL. Increasing caloric contribution from sugar-sweetened beverages and 100% fruit juices among US children and adolescents, 1988-2004. *Pediatrics*. 2008 Jun;121(6):e1604-14.
- 6 DiMeglio DP, Mattes RD. Liquid versus solid carbohydrate: effects on food intake and body weight. *Int J Obes Relat Metab Disord*. 2000 Jun;24(6):794-800.
- 7 "Frequently Asked Questions About Sugar." American Heart Association. Updated 2010 May 25.  
<[http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyDietGoals/Frequently-Asked-Questions-About-Sugar\\_UCM\\_306725\\_Article.jsp](http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/HealthyDietGoals/Frequently-Asked-Questions-About-Sugar_UCM_306725_Article.jsp)>
- 8 Marketing Food to Children and Adolescents. A Review of Industry Expenditures, Activities, and Self-Regulation. Federal Trade Commission July 2008.
- 9 Schulze MB, Manson JE, Ludwig DS, Colditz GA, Stampfer MJ, Willett WC, Hu FB. Sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes in young and middle-aged women. *JAMA*. 2004 Aug 25;292(8):927-34.
- 10 Schulze MB, Manson JE, Ludwig DS, Colditz GA, Stampfer MJ, Willett WC, Hu FB. Sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes in young and middle-aged women. *JAMA*. 2004 Aug 25;292(8):927-34.
- 11 Fung TT, Malik V, Rexrode KM, Manson JE, Willett WC, Hu FB. Sweetened beverage consumption and risk of coronary heart disease in women. *Am J Clin Nutr*. 2009 Apr;89(4):1037-42.
- 12 Dhingra R, Sullivan L, Jacques PF, Wang TJ, Fox CS, Meigs JB, D'Agostino RB, Gaziano JM, Vasan RS. Soft drink consumption and risk of developing cardiometabolic risk factors and the metabolic syndrome in middle-aged adults in the community. *Circulation*. 2007 Jul 31;116(5):480-8. Epub 2007 Jul 23. Erratum in: *Circulation*. 2007 Dec 4;116(23):e557.
- 13 Choi HK, Willett W, Curhan G. Fructose-rich beverages and risk of gout in women. *JAMA*. 2010 Nov 24;304(20):2270-8.
- 14 Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. *Am J Clin Nutr*. 2006 Aug;84(2):274-88. Review.
- 15 Vartanian LR, Schwartz MB, Brownell KD. Effects of soft drink consumption on nutrition and health: a systematic review and meta-analysis. *Am J Public Health*. 2007;97(4):667-675.
- 16 Malik VS, Popkin BM, Bray GA, Després JP, Willett WC, Hu FB. Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis. *Diabetes Care*. 2010 Nov;33(11):2477-83. Epub 2010 Aug 6. Review.
- 17 Schulze MB, Manson JE, Ludwig DS, Colditz GA, Stampfer MJ, Willett WC, Hu FB. Sugar-sweetened beverages, weight gain, and incidence of type 2 diabetes in young and middle-aged women. *JAMA*. 2004 Aug 25;292(8):927-34.
- 18 Brown IJ, Stamler J, Van Horn L, Robertson CE, Chan Q, Dyer AR, Huang CC, Rodriguez BL, Zhao L, Daviglus ML, Ueshima H, Elliott P; for the International Study of Macro/Micronutrients and Blood Pressure Research Group. Sugar-Sweetened Beverage, Sugar Intake of Individuals, and Their Blood Pressure: International Study of Macro/Micronutrients and Blood Pressure. *Hypertension*. 2011 Apr;57(4):695-701. Epub 2011 Feb 28.
- 19 Ludwig DS, Peterson KE, Gortmaker SL. Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet*. 2001 Feb 17;357(9255):505-8.
- 20 Sohn W, Burt BA, Sowers MR. Carbonated soft drinks and dental caries in the primary dentition. *J Dent Res*. 2006;85(3):262-266.

- 
- 21 Marshall TA, Levy SM, Broffitt B, Warren JJ, Eichenberger-Gilmore JM, Burns TL, Stumbo PJ. Dental caries and beverage consumption in young children. *Pediatrics*. 2003; 112(3 Pt 1):e184-e191.
  - 22 Boston Public Health Commission, Office of Research and Evaluation. Health of Boston 2010. p190.
  - 23 Yancey AK, Cole BL, Brown R, Williams JD, Hillier A, Kline RS, Ashe M, Grier SA, Backman D, McCarthy WJ. A cross-sectional prevalence study of ethnically targeted and general audience outdoor obesity-related advertising. *Milbank Q*. 2009 Mar;87(1):155-84.
  - 24 The Essential School Health Services Program Data Report. Boston Public Schools. 2009-2010 School Year.
  - 25 Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, Flegal KM. Prevalence of overweight and obesity in the United States, 1999-2004. *JAMA*. 2006 Apr 5; 295 (13); 1549-55.
  - 26 Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in US children and adolescents, 2007-2008. *JAMA*. 2010 Jan 20;303(3):242-9
  - 27 Boston Public Health Commission, Office of Research and Evaluation. Health of Boston 2010. p161.
  - 28 Boston Public Health Commission, Office of Research and Evaluation. Health of Boston 2010. p170.
  - 29 Finkelstein EA, Trogon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: payer-and service-specific estimates. *Health Aff (Millwood)*. 2009 Sep-Oct;28(5):w822-31.