

Table of Contents

-  **1** Impact of the Berkeley excise tax on sugar-sweetened beverage consumption. Falbe et al. *Am J Public Health*.
-  **2** The effects of the Danish saturated fat tax on food and nutrient intake and modeled health outcomes: an econometric and comparative risk assessment evaluation. Smed et al. *Eur J Clin Nutr*.
-  **3** Highly processed and ready-to-eat packaged food and beverage purchases differ by race/ethnicity among US households. Poti et al. *J Nutrition*.
-  **4** Added sugars intake across the distribution of US children and adult consumers: 1977-2012. Powell et al. *J Acad Nutr Diet*.
-  **5** Young adults' responses to alternative messages describing a sugar-sweetened beverage price increase. Gollust et al. *Public Health Nutr*.



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POLICY

Impact of the Berkeley excise tax on sugar-sweetened beverage consumption.

Falbe J, Thompson HR, Becker CM, Rojas N, McCulloch CE, Madsen KA. *Am J Public Health*. 2016 (in press).

Key Question: Did Berkeley's controversial sugary drink tax reduce residents' consumption of sugary drinks?

Key Finding: Total consumption of sugary drinks in low-income neighborhoods in Berkeley decreased 21 percent after the tax. This was significantly different from Oakland and San Francisco, where consumption increased 4 percent in similar neighborhoods.

Implications: This study provides the first evidence that a penny-per-ounce tax may reduce sugary drink consumption in the U.S.

In 2014, Berkeley became the first city in the U.S. to pass a penny-per-ounce tax on sugary drinks. The tax has been widely debated, but evidence has been sparse; past studies only focused on changes in sugary drink price. This study by Falbe and colleagues was the first to evaluate the tax's impact on consumption.

The authors approached residents on the street to conduct in-person surveys in Berkeley, Oakland, and San Francisco prior to the tax (April-July 2014) and after the tax (April-August 2015). Survey participants were asked how often they consume various sugary drinks. The surveys were

conducted in low-income neighborhoods with high proportions of African-American and Hispanic residents.

The 21 percent decline in Berkeley came primarily from decreases in soda (26 percent, compared to a 10 percent increase in San Francisco and Oakland) and sports drinks (36 percent, compared to a 21 percent increase). In contrast, water consumption increased more in Berkeley (63 percent versus 19 percent). Changes in consumption of other sugary drinks were not significantly different across cities.

Opponents had warned that the tax would lead to mass cross-border purchasing. However, only 2 percent of post-tax participants reported buying sugary drinks in a different city because of the tax, whereas 22 percent of post-tax participants reported changing drinking habits because of the tax. ■

Limitations: The study relied on surveys, and participants may have underreported consumption. The effect size was larger than what would be expected based on the price changes that have been reported. Participants were not followed over time, making it impossible to analyze changes on an individual basis.

POLICY

The effects of the Danish saturated fat tax on food and nutrient intake and modelled health outcomes: an econometric and comparative risk assessment evaluation [↗](#)

Smed S, Scarborough P, Rayner M, Jensen JD. *Eur J Clin Nutr.* 2016;70(6):681-6.

Key Question: Did Denmark's saturated fat tax change adults' dietary consumption, before the tax was abolished? What is the tax's long-term impact?

Key Finding: As intended, the saturated fat tax reduced consumers' saturated fat consumption across all age-sex groups, by an average of 4 percent. However, the tax also had unintended consequences on salt and fruit consumption, reducing its overall health impact.

Implications: To fully assess a tax's health impact, it is important to examine whether consumers compensate with untaxed food products.

In 2011, Denmark became the first country in the world to introduce a tax on saturated fat. Critics point to the tax as a failure because the Danish government abolished the tax in November 2012; prior to now, though, no study had evaluated its impact on overall diet quality or long-term health outcomes.

Smed and colleagues evaluated the tax by linking data on household purchases, collected from January 2009 through December 2012, with nutrient data from the Danish Food Composition Databank. Changes in consumption were estimated from changes in purchases, though the study did not account for waste.

Saturated fat intake dropped in all age-sex groups, with declines ranging from 1.6 percent in older men to 4.9 percent in middle-aged women. Total fat intake also declined in most age-sex

groups (-4 percent overall), whereas vegetable and fiber intake increased by 7.9 percent and 3.7 percent overall. However, salt consumption also increased in all age-sex groups except among young women, and fruit consumption declined in younger men and women and older women.

These substitution patterns reduced the tax's long-term health impact, which was estimated from the Preventable Risk Integrated Model (PRIME). PRIME has been used in several countries to predict non-communicable disease mortality based on behavioral risk factors. Overall changes in dietary consumption, accounting for substitution, were projected to result in 123 fewer deaths annually. This decline was mostly due to reductions in ischaemic heart disease among men. ■

Limitations: Although the authors controlled for pre-existing trends, it was impossible to conclude whether changes were due directly to the tax because there was no control group. Consumption was not directly measured, and the authors noted that the projected long-term impact was affected by assumptions about changes in total calorie consumption.

CONSUMPTION PATTERNS

Highly processed and ready-to-eat packaged food and beverage purchases differ by race/ethnicity among US households

Poti JM, Mendez MA, Ng SW, Popkin BM. *J Nutr.* 2016 (In press)

Key Question: How does intake of highly processed and convenience foods and beverages vary by race/ethnicity?

Key Finding: Black and Hispanic households had the lowest purchases of highly processed and ready-to-eat foods, including grain-based desserts and candy. Black household purchases were higher in sugar overall.

Implications: Interventions aimed at reducing consumption of added sugars should consider that sources of added sugars vary by race/ethnicity.

Racial/ethnic disparities in diet quality persist, but it is unclear whether highly processed and ready-to-eat (RTE) foods and beverages contribute to these inequalities. These types of foods and beverages tend to be higher in saturated fat, sugar, and salt, and consumption of them has been associated with higher calorie intake, poorer dietary quality, and obesity. Poti and colleagues analyzed household purchases from 2000 to 2012 (n=157,142 unique households) to understand how purchases of processed and convenience foods and beverages vary by race/ethnicity.

Data came from the Nielsen Homescan Panel, a nationwide survey of household purchases of packaged foods and beverages. Participating households used a barcode scanner to log all purchases for at least 10 months (mean time in study is 4.2 years). Scanned items were classified based on level of processing (four categories; minimally to highly processed) and convenience (three categories; requires cooking to RTE).

Compared to white households, black and Hispanic households had significantly lower

purchases of highly processed foods (95 and 82 fewer per person daily calories respectively) and RTE foods (97 and 81 fewer per person daily calories respectively). Lower purchases of grain-based desserts, candy, salty snacks, and dairy-based desserts among black and Hispanic households contributed to the difference in highly processed foods. Lower purchases of candy, nuts, salty snacks, and grain-based desserts contributed to differences in RTE food purchases.

Conversely, black and Hispanic households had higher purchases of basic processed foods (e.g., oils and sweeteners) and foods requiring cooking (e.g., rice). Black household purchases were higher in sugar, including more calories per person per day from sugary drinks (19 more calories) and sweeteners (17 more calories) than white households. ■

Limitations: Participating households are not representative of the US as a whole; distribution of income across racial/ethnic groups does not match that of the US population. The survey measures purchases, not consumption, and does not capture foods and beverages without a barcode (for example, restaurant meals or some whole foods). Degree of processing or convenience may not reflect healthfulness. For example, sweeteners and cooking oil are basic processed foods.

CONSUMPTION PATTERNS

Added Sugars Intake Across the Distribution of US Children and Adult Consumers: 1977-2012

Powell ES, Smith-Taillie LP, Popkin BM. *J Acad Nutr Diet*. 2016 (In press)

Key Question: *How has consumption of added sugars varied over time and across the population?*

Key Finding: *Children and adults consumed more added sugars than is recommended by the Dietary Guidelines for Americans (70 and 40 percent more respectively), and white children and black adults tended to report the highest level of consumption. Sugary drink intake is declining, while sweetened food intake remains stable.*

Implications: *Over the last few decades, progress has been made in curbing consumption of sugary drinks, while sweetened foods remain a stable and significant contributor to overall added sugars intake. Interventions that focus on sweetened foods are needed to bring consumption levels down to the recommended 10 percent of daily calories.*

The previous study by Poti and colleagues uncovered how different racial/ethnic groups obtain added sugars from different products. This underscores the need to understand trends in total consumption of added sugars and who is at greatest risk.

Powell and colleagues filled this important data gap by presenting the most recently available data on total added sugars consumption, including how consumption has changed over time and how low versus high consumption varies by race. Authors analyzed six waves of nationally representative surveys of food intake in the United States, 1977-1978 to 2011-2012, and described recent food and beverage trends.

While intake of added sugars from beverages has declined, intake of added sugars from foods has remained stable from 2003-2004 to 2011-2012. In 2011-2012, children (2-18 years) consumed 70 percent more added sugars than is recommended by the Dietary Guidelines and adults consumed 40 percent more than is recommended, with no meaningful decline in percent of calories from added sugars since 2003-2004. In 2011-2012, children and adults consumed more calories per day from added sugars compared with 1977-1978 (51 and 81 calories respectively). Among children, black and Mexican-Americans were less likely to report consumption at the highest level (620 calories per day). Black adults were more likely to report consumption at the highest level (708 calories per day). ■

Limitations: Data are self-reported and participants may have underreported intake. During the study period, there were several changes in the methods of recording dietary intake, although steps were taken to maximize comparability between survey years. Although this study uses the most recently released USDA equivalents database to estimate added sugars, the USDA food composition tables are not updated as quickly as new products or product reformulations emerge.

ATTITUDES AND BELIEFS

Young adults' responses to alternative messages describing a sugar-sweetened beverage price increase

Gollust SE, Tang X, White JM, French SA, Runge CF, Rothman AJ. *Public Health Nutr.* 2016 (In press)

Key Question: Does the rationale provided for a sugary drink tax affect young adults' behavioral intentions and attitudes toward sugary drinks?

Key Finding: The justification given for adopting a sugary drink tax may impact intention to purchase a sugary drink and perceptions of sugary drink companies.

Implications: Advocates should consider how the rationale provided for a tax may impact attitudes toward sugary drinks and intention to purchase, in addition to garnering support for the tax.

Prior tax campaigns have used different frames for describing the rationale for a sugary drink tax, including reducing obesity or funding early education. Authors examined whether the rationale provided for a hypothetical sugary drink tax influences young adults' intentions to purchase sugary drinks and their attitudes about sugary drink products, policies and the beverage industry compared with no rationale.

Undergraduate students (n=494) at the University of Minnesota completed an online survey between April and November 2014. Participants were asked a series of questions about their beverage consumption and then were presented with a vignette about entering a convenience store on a hot day to purchase a beverage. Respondents were told that upon entering the store, they noticed a 15-cent price increase (about a 9 percent increase) on their favorite 16-ounce sugary drink.

Participants were randomly assigned to one of eight messages providing tax rationales: (1) no rationale; (2) a new tax on the product; (3) a new user fee on the product; 4) a tax to raise revenue for state obesity prevention efforts; (5) a tax for state budget deficit improvement; (6) a tax to offset health-care costs for oral health problems; (7) a tax to offset the health-care costs for chronic health conditions; or (8) a tax to protect children from harm. Participants reported their intention to purchase the sugary drink, attitudes about sugary drinks, perceptions of sugary drink companies, level of support for a one cent per ounce tax, and current beverage consumption.

Four messages were associated with a reduction in participant intentions to purchase the sugary drink compared with no justification: 1) describing a user fee; 2) a message describing the tax goal to reduce obesity; 3) a message describing the tax goal to offset chronic health-care costs (but not oral health-care costs); and 4) a message to protect children.

No significant differences by message were observed for the sugary drink attitude measure or the soda tax policy support measure. However, message type was associated with perceptions of soda companies. Messages describing the price increase as a user fee or as a tax to reduce obesity led to less favorable attitudes about soda companies, compared with a message describing a price increase with no justification. ■

Limitations: Participating students are from a single university and are not representative of all young adults. Students were presented with a hypothetical situation and reported intentions to purchase, which may not reflect how they would actually behave in the real world.

The influence of brand equity characters on children's food preferences and choices. [🔗](#)

McGale LS, Halford JC, Harrold JA, Boyland. *EJ. J Pediatr.* 2016 (*In press*)

Does Coco the Monkey influence children's food preferences and choices, even when Coco is matched with the wrong product? McGale and colleagues explored this question and the impact of brand equity in a randomized trial of 209 children, age 4-8, in the UK. When presented with a matched pair of identical foods that only differed in whether the food packaging had a brand equity character such as Coco, children tended to prefer the item with a character. In some cases, the preference extended to scenarios where the same character was matched with a different product.

Research Watch reviews the evidence on the health effects of sugar and the effectiveness of policy and other interventions to curb consumption to inform sugar reduction activities across the US.

Healthy Food America acts on scientific evidence to drive change in food policy and industry practice, giving people greater control over their health and reducing diet-related illnesses, such as obesity, diabetes, and heart disease.

This publication was prepared by Dan Taber and Petra Vallila-Buchman.