



Trends in Sugary Drinks Consumption in the US, 2005–2012

Major Conclusions

- Sugary drink intake remained stable in 2005–06 to 2011–12 overall. More than 1 in 2 Americans consumed sugary drinks on any given day. Even our youngest are likely to consume sugary drinks. Almost half of 2 to 5-year-olds and two-thirds of 6 to 11-year-olds reported consuming sugary drinks on any given day.
- Racial disparities in consumption of sugary drinks remained stable. Although blacks and Mexican-Americans were more likely to consume sugary drinks, whites who do consume get significantly more calories from these drinks than blacks or Mexican-Americans.
- Disparities by income worsened over time.
- Teens (12–19 years) remain the age group most likely to report consumption, but this group also saw a decline in consumption.
- Soda remains the #1 sugary drink for Americans, but its predominance has diminished slightly.

Background

Advocates around the country are working to reduce consumption of sugary drinks through policy change and by raising awareness about the health harms of these beverages. This brief reviews recent data to help advocates and policy makers understand recent trends in consumption, where disparities in consumption across income and racial groups lie, which sugary drinks should be targeted in initiatives to reduce consumption, and the scale of consumption.

This research brief improves upon prior publications on this topic by including the four most recent waves of data from the National Health and Nutrition Examination Survey (NHANES), from 2005–2012. We report calorie intake among regular and heavy consumers of sugary drinks, identify disparities by race and income, and include a larger variety of sugary drinks than prior studies.

Methods

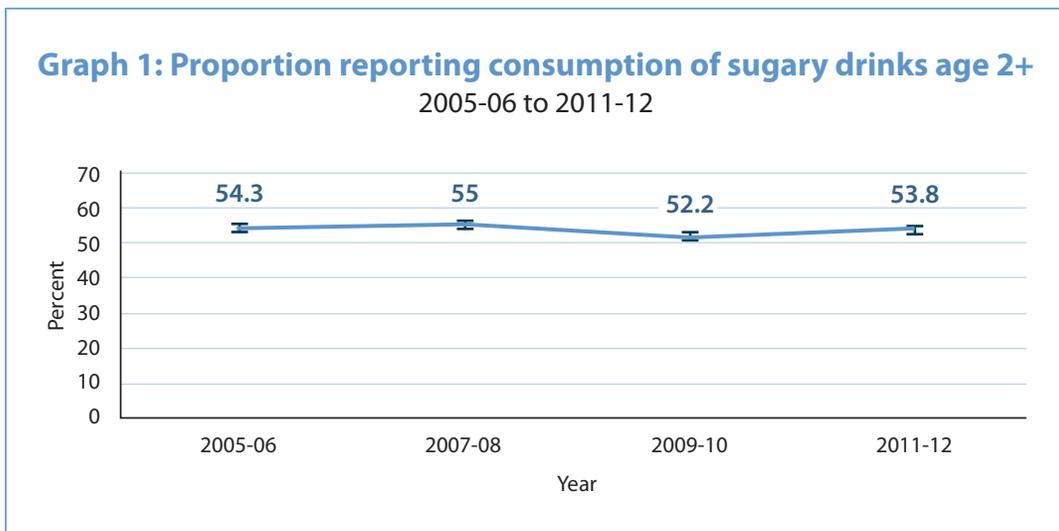
Analyses for this brief included seven types of sugary drinks (soda, fruit drinks, sweet coffee, sweet tea, energy drinks, sports drinks, and sweet milk). Although sweet milk contains calories from fat and protein, it was included because it is one of largest sources of added sugars in school settings. We summarize trends in consumption of these beverages across the four most recent waves of NHANES available at the time of analysis (2005–06, 2007–08, 2009–10, and 2011–12). Within and across waves, we tested for statistically significant differences in consumption levels by race, age, and income levels. NHANES measures consumption by asking participants to report beverages consumed in the past 24 hours. Consumption levels were quantified using five different metrics – prevalence of “consumers” (defined as consuming at least eight ounces in the previous 24 hours), prevalence of “heavy consumers”



(defined as consuming at least 24 ounces in the previous 24 hours), average calories among consumers, average calories among heavy consumers, and average calories overall. Additional details on the Methods can be found at the end of this brief.

Are Americans consuming fewer sugary drinks?

From 2005-06 to 2011-12, there was no statistically significant change in any of the metrics of sugary drink consumption that we examined. In every survey wave, more than 1 in 2 Americans consumed sugary drinks (see Graph 1) and approximately 1 in 4



consumed “heavy” amounts in the previous 24 hours. The proportion of heavy consumers did decline slightly, from 27.2 percent in 2005-06 to 24.8 percent in 2011-12, but the decline was not large enough to be statistically significant. Likewise, there were modest declines in the number of calories that consumers drank during this period, but these modest differences were not statistically significant; calories from sugary drinks declined 5 percent among consumers (from 365 to 347 calories per day, respectively) and 2 percent among heavy consumers (from 540 to 530 calories per day, respectively).

These modest changes led to a non-significant decline in calories from sugary drinks for the U.S. overall, from 203 to 192 calories per day. To put this in perspective, the amount of calories from consuming sugary drinks nearly matches the number of excess calories that experts believe account for the substantial increase in obesity in the U.S. over 3 decades (220 calories per day),¹ when Americans’ overall caloric intake was increasing. The plateau that we found echoes a recent CDC report that found sugary drink consumption levelled off in recent years.² Overall, studies have reported that sugary drink consumption increased until 1999-2004,^{3,4} declined in the mid-2000s,⁵ and stalled more recently.^{2,6} Ford and colleagues, for example, found that sugary drink consumption among kids age 2-5 declined from 2003-04 to 2009-10 but stagnated from 2009-10 to 2011-12.⁶ Experts have speculated that the plateau occurred because early declines were limited to specific sub-groups.⁷ The plateau may have also occurred if declines in specific types of sugary drinks are offset by increases in other types. Our results back up these ideas because, as we discuss in the next sections, any declines that have taken place in recent years were limited to a small number of age groups, income groups, and beverage types.

What age groups consume the most?

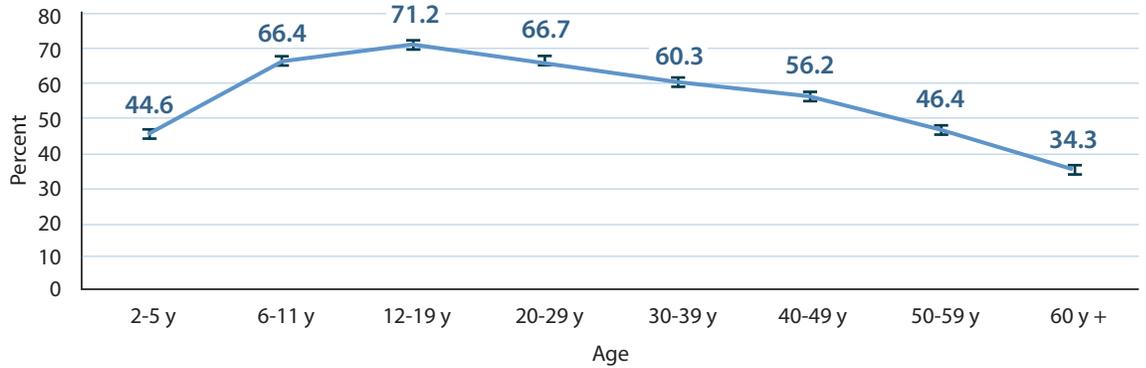
Across all waves of NHANES, adolescents (age 12-19) and young adults (age 20-29) were more likely to consume sugary drinks than older adults or children (see Graph 2). More than 70 percent of 12



to 19-year-olds reported consuming sugary drinks in all four waves of NHANES (71.2 percent overall). The prevalence of consumption declines beyond that age, but even among adults age 60 and higher, more than 1 in 3

Graph 2: Proportion reporting daily consumption of sugary drinks by age

2005-06 to 2011-12

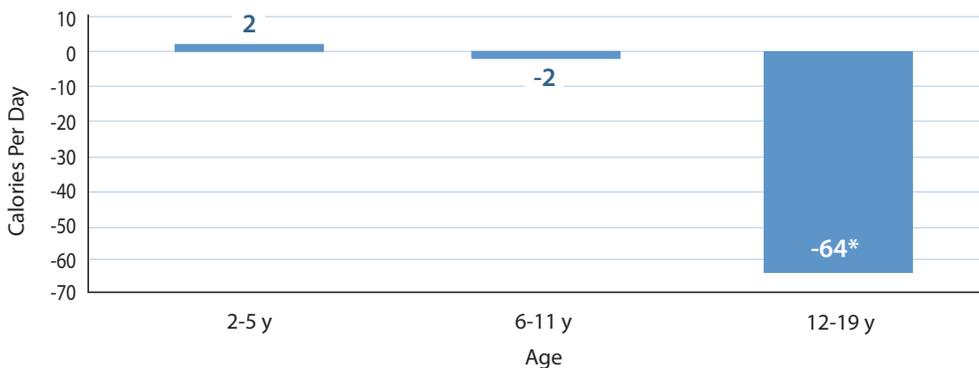


consumed sugary drinks (34.3 percent for all waves combined). Patterns are similar for all other metrics as well. The prevalence of heavy consumption, for example, was highest in adolescents (38.2 percent) and young adults (38.8 percent). Heavy consumption was less common in young kids and older adults, but even among these groups, approximately 1 in 10 Americans consumed heavy amounts of sugary drinks (11.1 percent of kids age 2-5 and 9.9 percent of adults age 60 and higher).

Adolescents consumed more than any other age group, but there were also signs of progress in adolescents. From 2005-06 to 2011-12, average consumption among 12-19-year-olds declined from 316 to 252 calories per day overall. This was due primarily to significant declines in both the prevalence of heavy consumption (44.3 percent to 35.2 percent, respectively) and a decline in how much consumers drank (426 to 353 calories per day, respectively). Adolescents were the only age group in which consumption levels declined significantly in recent years. In contrast, younger kids and adults have shown no signs of progress. The average number of calories among children 2-5, for example, was 148 in 2005-06 and 150 in 2011-12; the average number of calories among children 6-11 was 209 in

Graph 3: Change in calories from sugary drinks per capita, by age

2005-06 to 2011-12



*-p<0.05

2005-06 and 207 in 2011-12. See Graph 3 for changes in sugary calories consumed per capita by age from 2005-06 to 2011-12.

Different age groups also consume different sugary drinks. Children age 2-5, on average, consumed almost four times as many calories in the form of sweet milk



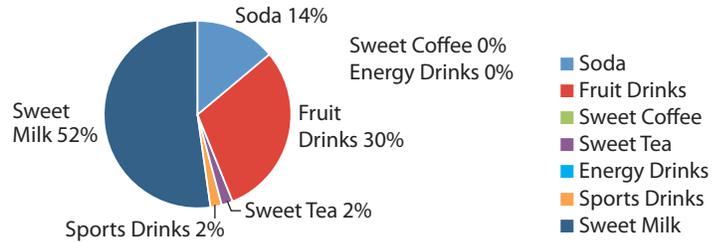
compared to soda (78 versus 21 calories, respectively). Children age 2-5 also consumed more calories in the form of fruit-flavored drinks (45 calories per day) compared to soda. Beverage choices shifted toward soda in adolescence and young adulthood, as 20- to 29-year-olds consumed more calories from soda than all other sugary drinks combined (149 versus 124). See Graphs 4 A-D for shifting sugary drink patterns by age.

Differences by race

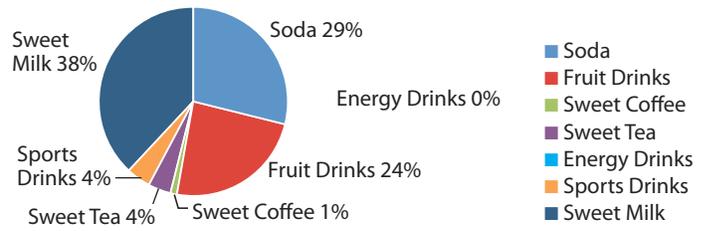
People of color were more likely to report drinking sugary beverages than whites. Across all years and age groups combined, nearly 2 of 3 blacks and Mexican-Americans drank them on a given day (64.3 percent for each group), versus 1 in 2 whites (50.4 percent). Blacks and Mexican-Americans were also significantly more likely to report heavy consumption (30.3 percent and 29.4 percent, respectively) than their white counterparts (24.8 percent). Due to these large differences in the prevalence of consumption, average caloric intake across waves was higher among blacks and Mexican-Americans (225 and 223 calories per day, respectively) compared to whites (187 calories per day).

Surprisingly, patterns by race were reversed when looking at daily calories from these drinks specifically among consumers. That is, although blacks and Mexican-Americans were more likely to consume sugary drinks, whites who do consume get significantly more calories from these drinks than blacks or Mexican-Americans (363 calories per day versus 342 and 338, respectively). The same was true among heavy consumers (541 calories per day versus 513 and 508, respectively). See Graphs 5 A and B for consumption metrics by race.

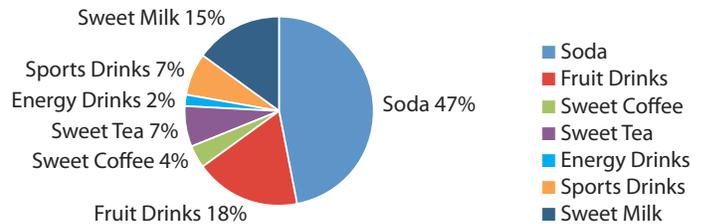
Graph 4A: Calories from sugary drinks per capita by age
2005-12: 2-5 years



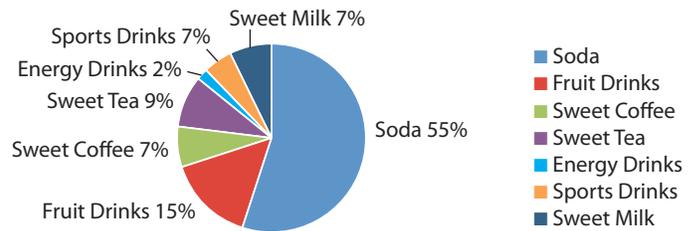
Graph 4B: Calories from sugary drinks per capita by age
2005-12: 6-11 years



Graph 4C: Calories from sugary drinks per capita by age
2005-12: 12-19 years



Graph 4D: Calories from sugary drinks per capita by age
2005-12: 20-29 years





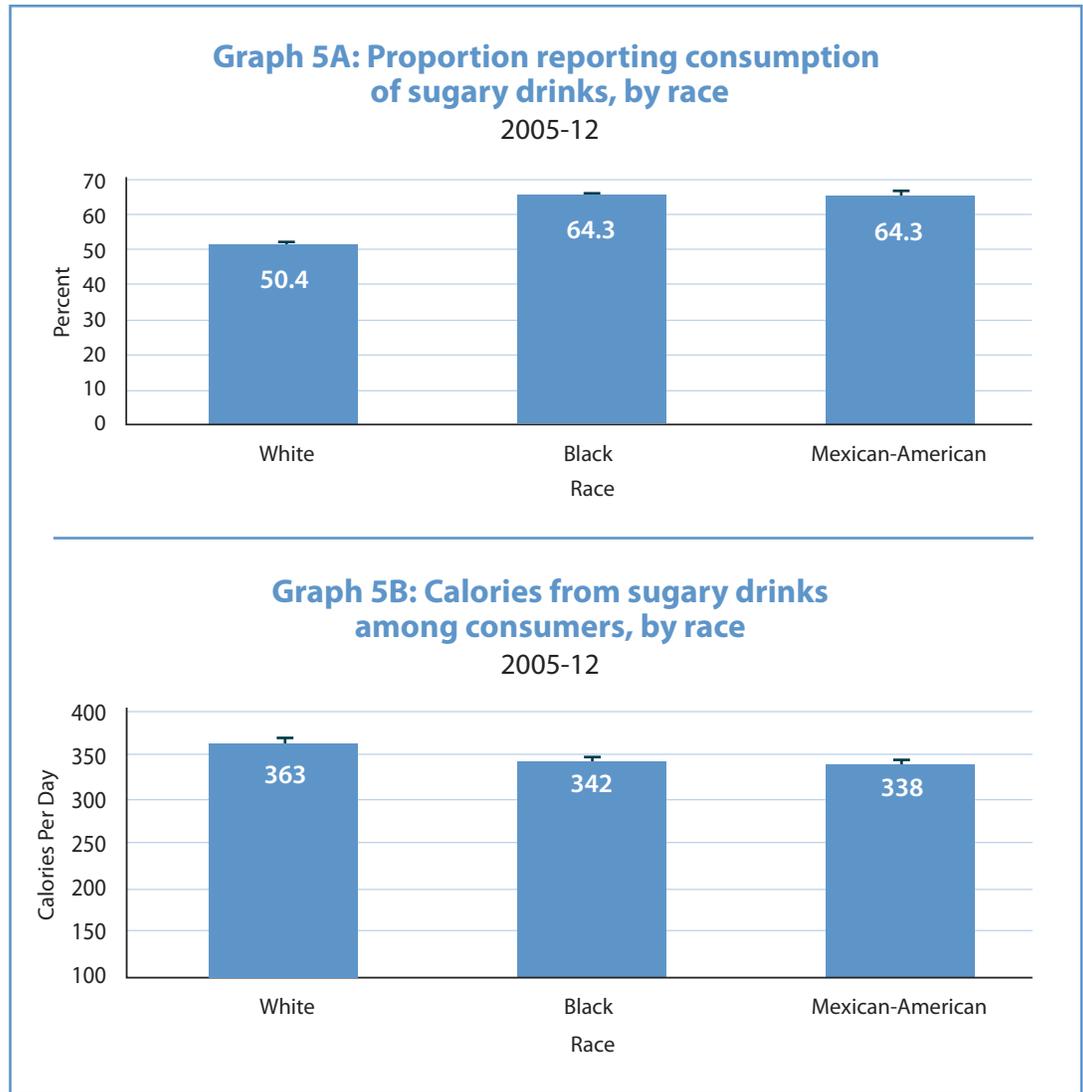
The types of sugary drinks that Americans consumed also differed by race. Soda was not as predominant among blacks and Mexican-Americans compared to whites. Among heavy consumers, for example, whites drank significantly more soda (217 calories per day) than blacks and Mexican-Americans (173 and 176 calories per day respectively) but significantly less fruit-flavored drinks (49 calories per day versus 135 and 69, respectively). See Graphs 6 A, B, and C for sugary drink patterns by race.

Differences by income

Racial disparities in sugary drink consumption have persisted but

remained relatively stable; the picture is bleaker when looking at income disparities. Each metric of sugary drink consumption has been stagnant among low-income Americans, whereas signs of progress have been seen in high-income Americans. The prevalence of heavy consumption, for example, barely changed among low-income Americans (31.0 percent in 2005-06 versus 29.7 percent in 2011-12) but declined among high-income Americans from a high of 25.9 percent in 2007-08 to 16.4 percent in 2011-12. Among heavy consumers, the average number of calories per day was lower in high-income Americans compared to low-income Americans, and the difference has grown over time (497 calories per day in high-income Americans versus 580 in low-income Americans in 2011-12). See Graph 7 A and B for consumption metrics by income.

These trends across income groups exacerbated disparities that already existed. High- versus low-income differences in average calories from sugary drinks per day grew from 73 to 96 over time. These differences come primarily from differences in soda and, to a lesser degree, fruit drink and sweet milk consumption.



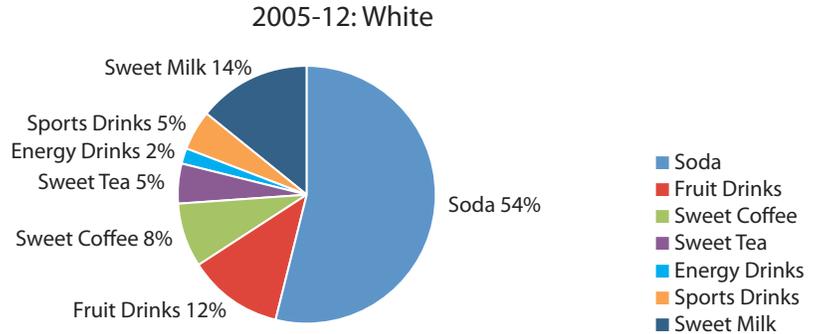


Is soda still the beverage of choice? Or are Americans substituting other beverages?

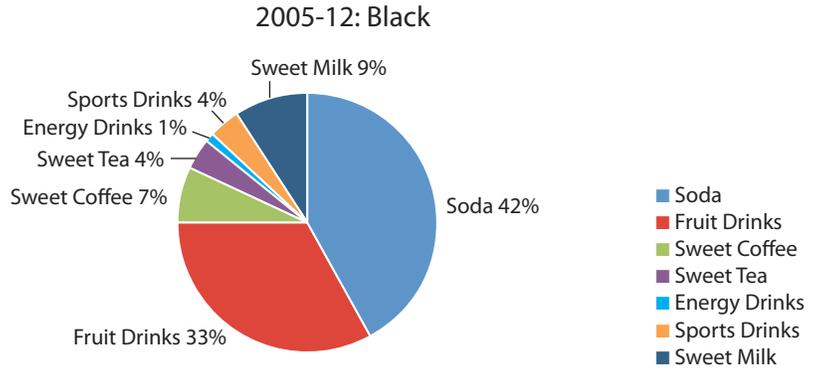
Soda remains the #1 sugary drink for Americans, 27.7 percent of whom consumed soda on an average day in 2011-12. However, the predominance of soda in the American diet has diminished slightly. Average consumption of calories from soda declined 24 percent from 2005-06 to 2011-12 (100 calories to 76 calories per day), whereas calories from all other sugary drinks remained stable or increased.

Some beverages with a small market share have emerged as more popular options over time. Of the seven beverage categories that we analyzed, two categories – sweet tea and energy drinks – increased by a statistically significant amount over time in terms of calories consumed. Average daily consumption levels are relatively low for these beverages (22 calories from sweetened tea and 4 calories from energy drinks in 2011-12) but grew from 2005-06 to 2011-12. See Graph 8 for average calories from different sugary drinks 2005-06 to 2011-12.

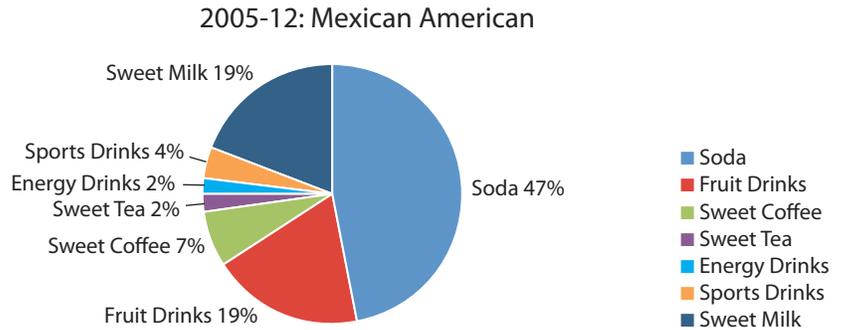
Graph 6A: Calories from sugary drinks among heavy consumers by race



Graph 6B: Calories from sugary drinks among heavy consumers by race



Graph 6C: Calories from sugary drinks among heavy consumers by race



Conclusion - has progress in sugary drink consumption stalled?

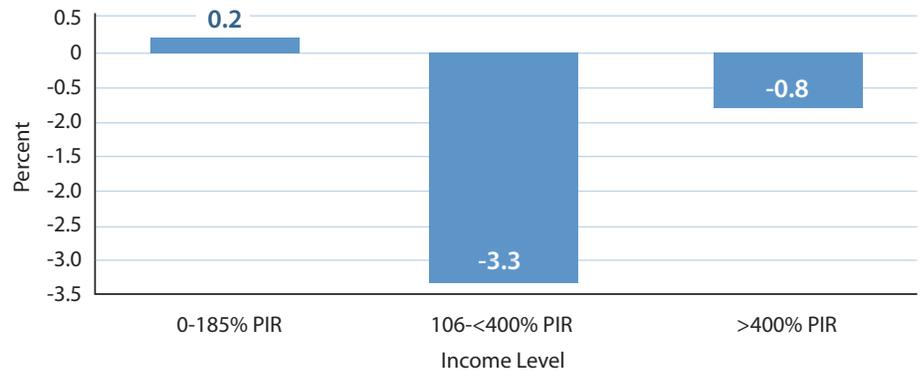
The average number of calories that Americans consume from sugary drinks has remained stable and high. However, national summaries mask important differences by age, race, income, and beverage type. Declines have taken place among the highest consumers (adolescents), who are consuming less of



the most popular beverage (soda). This trend does not extend to young children, older adults, and low-income populations. Racial disparities in sugary drink consumption have persisted overall but differ depending on the exact metric (i.e., prevalence of consumption versus calories among consumers), while income disparities have grown larger than ever. The decline in soda was partially negated by fruit drinks, energy drinks, sweet tea, and sweet milk, which either increased overall or remained a particularly popular choice in specific sub-groups. Collectively, these results underscore the need to continue efforts toward reducing the prevalence of sugary drinks, adapt to changes in the market, and consider how to reach sub-groups that have higher consumption levels. ■

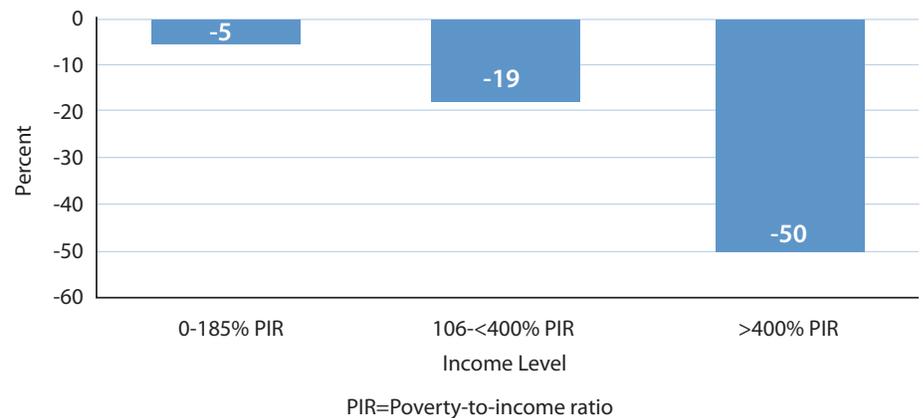
Graph 7A: Change in proportion reporting consumption of sugary drinks, by income

2005-06 to 2011-12



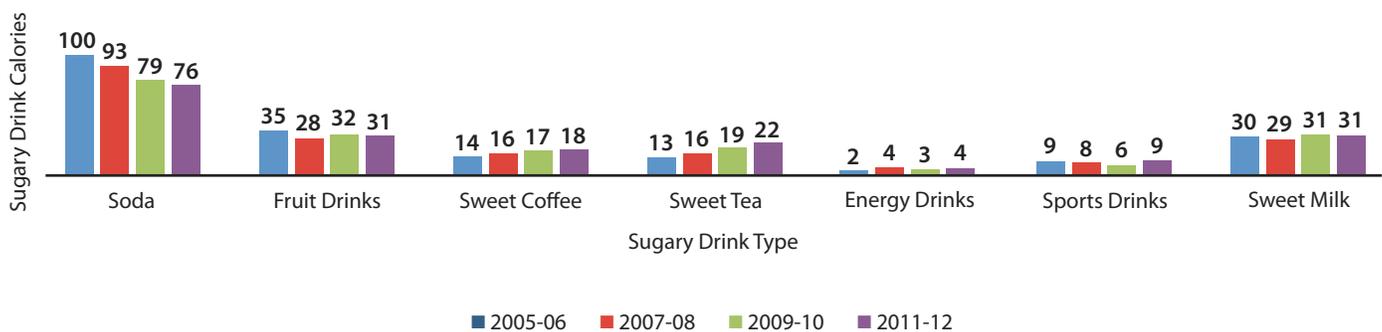
Graph 7B: Change in calories from sugary drinks among daily consumers, by income

2005-06 to 2011-12



Graph 8: Calories from sugary drinks per capita by year

2005-06 to 2011-12





References

1. Hall KD, Sacks G, Chandramohan D, et al. Quantification of the effect of energy imbalance on bodyweight. *Lancet* 2011;378:826-37.
2. Rosinger A, Herrick K, Gahche J, Park S. Sugar-sweetened Beverage Consumption Among U.S. Adults, 2011-2014. *NCHS Data Brief* 2017:1-8.
3. 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;89:372-81.
4. 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;121:e1604-14.
5. Kit BK, Fakhouri TH, Park S, Nielsen SJ, Ogden CL. Trends in sugar-sweetened beverage consumption among youth and adults in the United States: 1999-2010. *Am J Clin Nutr* 2013;98:180-8.
6. Ford CN, Ng SW, Popkin BM. Ten-year beverage intake trends among US preschool children: rapid declines between 2003 and 2010 but stagnancy in recent years. *Pediatr Obes* 2016;11:47-53.
7. Dewey C. "Americans were making a lot of progress cutting back on sugary drinks. Now that's stopped." *The Washington Post*. January 26, 2017. Retrieved from: https://www.washingtonpost.com/news/wonk/wp/2017/01/26/americans-were-making-a-lot-of-progress-cutting-back-on-sugary-drinks-now-thats-stopped/?utm_term=.b8ff664f9fb4

Appendix - Methods

Sample

Data were drawn from the four cycles of the National Health and Nutrition Examination (NHANES) Survey 2005-2006 (n=10,348), 2007-2008 (n=10,149), 2009-2010 (n=10,537), and 2011-2012 (n=9,756). Data were drawn from participants, aged 2 and older, who had complete dietary intake data on at least one day of recall. Among adults, this meant using their first day of dietary recall data (where the sample size from day two consisted of only a subset of those who responded on day 1). For children however, it was possible that their only day of dietary recall data was from the day 2 survey. In those cases, day 2 data were used. The final sample size for the study was 40,790 individuals aged 2-85 years.

Dietary Data

Dietary intake data were collected by interviewer administered 24-hour recalls using the Automated Multiple Pass Method, which has been shown to increase recall accuracy. Individual foods and beverages consumed were initially grouped according to the University of North Carolina/Robert Wood Johnson Foundation Food Grouping System, which places foods into groups based on similar nutritional characteristics and includes both low and high sugar and low and high fat food groups where applicable. For beverages specifically, a total of 32 high/low sugar and high/low fat beverage groups were created and used to generate the beverage groups of interest for this analysis.

Statistical Analyses

Data are presented as means and proportions ± standard errors. Consumption trends were divided into 8 age groups (2-5 years old, 6-11 years old, 12-19 years old, 20-29 years old, 30-39 years old, 40-49 years old, 50-59 years old, 60 years +), three racial/ethnic groups (Non-Hispanic White, Non-Hispanic Black and Mexican-American), and three income groups (<=185% Poverty-to-Income Ratio [PIR], >185-≤400 PIR, and >400% PIR). Survey commands were used to account for survey design and weighting. For each survey year, trends were estimated for (1) the percent consuming ≥ 8 oz (consumer) and (2) ≥ 24 oz (heavy consumer) and (3) the calories per capita and (4) calories among consumers and (5) calories among heavy consumers. 'svy' and 'test' commands were used in Stata v.13 to weight results and control for sample design effects while testing for significant differences. A p-value of P<0.05 with Bonferroni correction for multiple comparisons was set for statistical significance.