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Data Brief

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Caffeine Consumption Among Youth Ages 2–19: United States, August 2021–August 2023

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Key findings

Data from the National Health and Nutrition Examination Survey

- During August 2021–August 2023, 62.6% of youth consumed caffeine on a given day.
- Children ages 2–5 were less likely to consume caffeine than other age groups, and no differences were seen between boys and girls.
- On average, youth consumed 19.4 mg of caffeine on a given day, and mean intake increased with age: 5.0 mg for ages 2–5, 12.0 mg for ages 6–11, and 30.7 mg for ages 12–19.
- The top five sources of caffeine consumed by youth included both food and beverage items, including sweet bakery products and soda.
- Youth consumed most caffeinated products at home (67.8%) and most caffeinated products were purchased from grocery stores (65.6%).

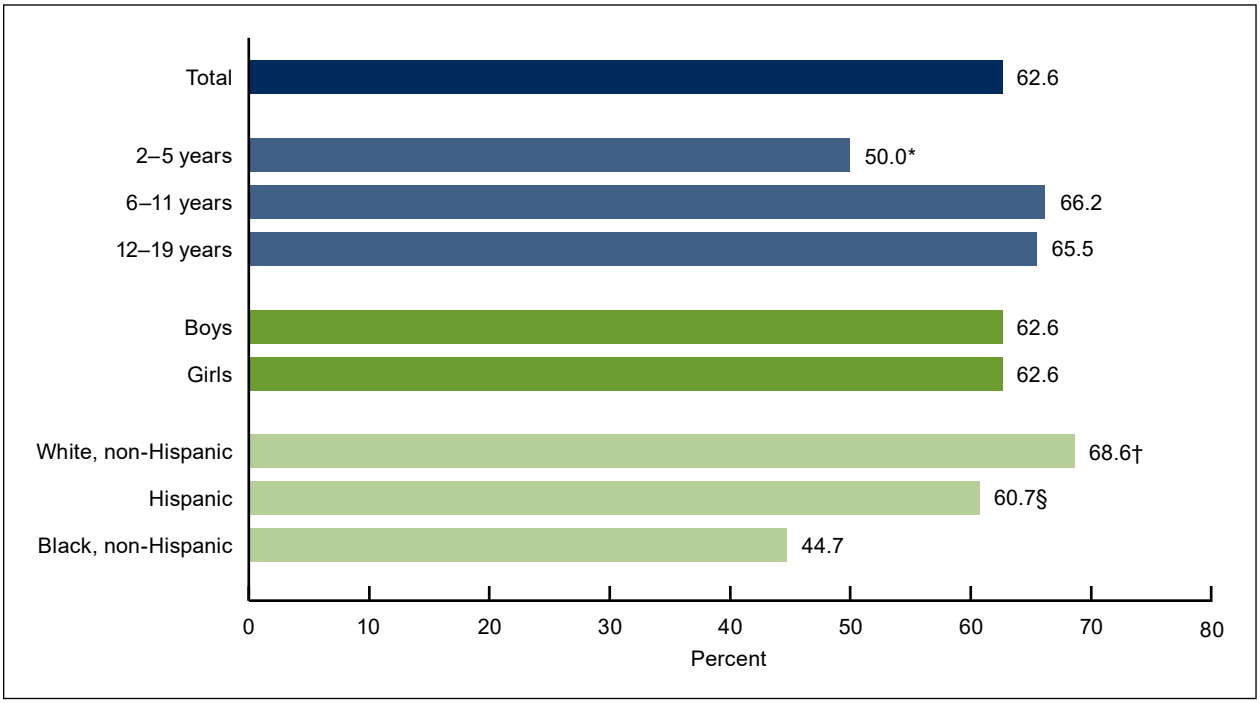
Introduction

Caffeinated products are increasingly available to youth (1). Guidelines for safe levels of caffeine intake are based on adults and have not been established through research including children (1). Caffeine consumption may disrupt sleep (2), and many caffeinated products consumed by youth contain high levels of added sugar, which may increase the risk of obesity, type 2 diabetes, and cavities (1,3,4). This report provides estimates of the percentage of youth ages 2–19 who consumed caffeine on a given day during August 2021–August 2023, by age group, sex, and race and Hispanic origin. Top sources of caffeine, places of consumption, and where caffeine was obtained are also presented.

Percentage of youth consuming caffeine

- During August 2021–August 2023, 62.6% of youth ages 2–19 consumed caffeine on a given day (Figure 1, Table 1).
- A lower percentage of children ages 2–5 consumed caffeine on a given day (50.0%) compared with youth ages 6–11 (66.2%) and 12–19 (65.5%).
- The percentage of youth consuming caffeine was similar for boys and girls.
- A higher percentage of White non-Hispanic (subsequently, White) youth consumed caffeine on a given day (68.6%) compared with Hispanic (60.7%) and Black non-Hispanic (subsequently, Black) (44.7%) youth.

Figure 1. Percentage of youth ages 2–19 who consumed caffeine on a given day, by age group, sex, and race and Hispanic origin: United States, August 2021–August 2023

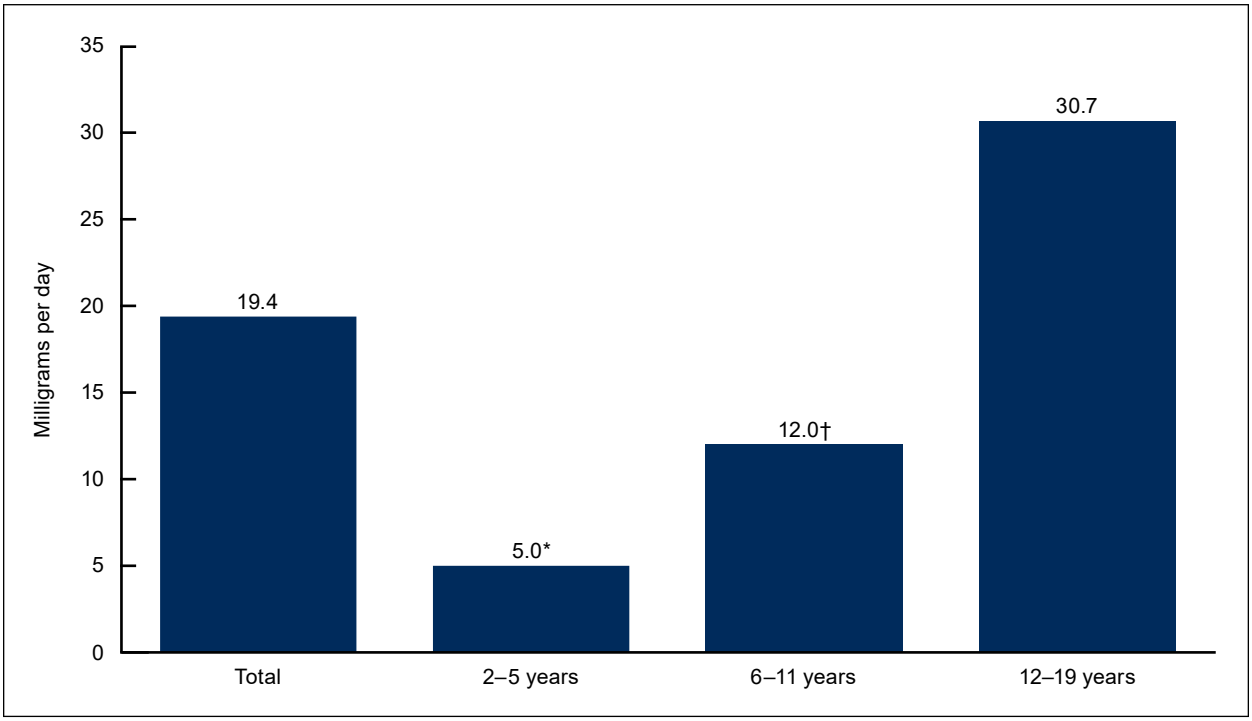


* Significantly lower than age groups 6–11 and 12–19 years ($p < 0.05$).
† Significantly higher than Hispanic and Black non-Hispanic youth ($p < 0.05$).
§ Significantly higher than Black non-Hispanic youth ($p < 0.05$).
NOTE: People of Hispanic origin may be of any race.
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Mean caffeine intake

- Youth ages 2–19 consumed an average of 19.4 milligrams (mg) of caffeine per day (Figure 2, Table 2).
- Caffeine intake increased with age, from an average daily intake of 5.0 mg among children ages 2–5 to 30.7 mg among adolescents ages 12–19.

Figure 2. Mean caffeine intake on a given day among youth ages 2–19, by age group: United States, August 2021–August 2023

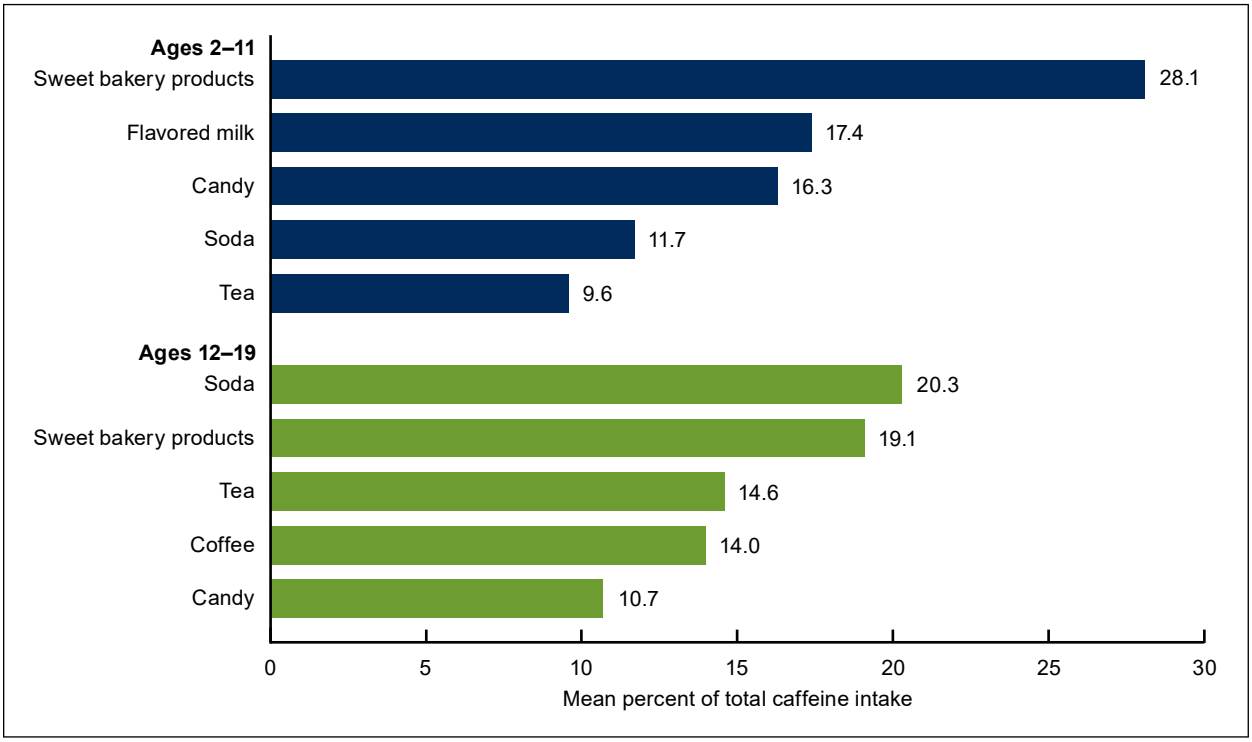


* Significantly lower than age groups 6–11 and 12–19 years ($p < 0.05$).
† Significantly lower than age group 12–19 years ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Top sources of caffeine

- The top sources of caffeine consumed by youth varied by age group (Figure 3, Table 3).
- For children ages 2–11, sweet bakery products were the top sources of caffeine (28.1% of total caffeine intake), followed by flavored milk (17.4%), candy (16.3%), soda (11.7%), and tea (9.6%).
- Among youth ages 12–19, soda (20.3%) and sweet bakery products (19.1%) were the top sources of caffeine, followed by tea (14.6%), coffee (14.0%), and candy (10.7%).

Figure 3. Top five sources of caffeine consumed on a given day among youth ages 2–19, by age group: United States, August 2021–August 2023

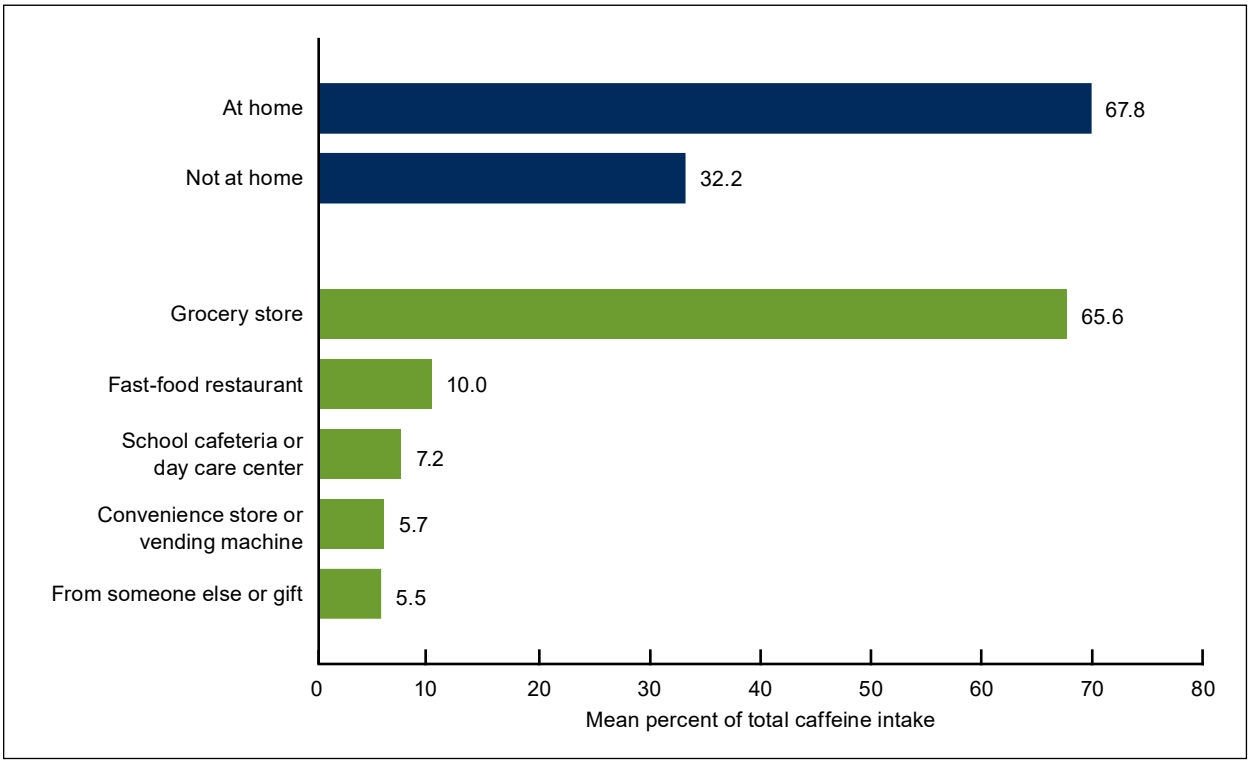


NOTE: Foods and beverages are grouped using the U.S. Department of Agriculture's "What We Eat in America" categories.
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Place of consumption and where caffeine was obtained

- On average, most caffeinated products were consumed at home (67.8%) (Figure 4, Table 4).
- Most caffeine consumed by youth came from grocery stores (65.6%), followed by fast-food restaurants (10.0%), school cafeterias or day care centers (7.2%), convenience stores or vending machines (5.7%), and someone else or as a gift (5.5%).

Figure 4. Percentage of caffeine consumed on a given day by youth ages 2–19, by place of consumption and top five places where caffeine was obtained: United States, August 2021–August 2023



SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Summary

During August 2021–August 2023, 62.6% of youth consumed caffeine on a given day. Caffeine intake was more common among White youth compared with Hispanic and Black youth. Mean caffeine intake increased with age, from 5.0 mg among children ages 2–5 to 30.7 mg among adolescents ages 12–19 (similar to the caffeine content of a 12-ounce can of soda) (5). Sweet bakery products were among the top two sources of caffeine consumed by youth on a given day, ranking first for children ages 2–11 and second (after soda) for adolescents ages 12–19. Youth consumed most caffeine at home, and most caffeine came from food or beverages purchased at a grocery store.

Definitions

Caffeine consumption: Based on Day 1 dietary recall. Caffeine intake is available for each food and beverage item that respondents reported consuming during their 24-hour dietary recall. Any caffeine consumption is defined as consuming 1 mg of caffeine or more from any source (food or beverage). Total caffeine intake is defined as the milligrams of caffeine consumed on a given day by a person. Mean caffeine intake is calculated by dividing the total

caffeine intake in the subpopulation of interest by the total number of individuals in that subpopulation and applying survey weights to get a weighted estimate. Differences in mean caffeine intake by age may be partly due to age differences in caloric intake. When adjusted to account for differences in caloric intake by standardizing to a 2,000 kcal diet, adjusted mean caffeine intake was 21.6 mg for all youth ages 2–19, 7.0 mg for ages 2–5, 13.2 mg for ages 6–11, and 33.8 for ages 12–19. Because age group differences in mean caffeine intake were consistent in direction and statistical significance regardless of whether estimates were adjusted for caloric intake, the current report presents unadjusted estimates.

Food and beverage categories: Foods and beverages were grouped using the U.S. Department of Agriculture's "What We Eat in America Food Categories" (6). Coffee includes all varieties of coffee. Tea includes all varieties of tea. Soda includes both sweetened and diet soft drinks. Energy drinks include both sweetened and diet energy drinks. Flavored milk includes flavored varieties of dairy milk, such as chocolate milk, and other dairy drinks. Sweet bakery products include cakes, pies, cookies, brownies, doughnuts, sweet rolls, and pastries. Candy includes candy containing chocolate and candy not containing chocolate. The percentage of caffeine from a food and beverage category is computed as the caffeine from that specific food or beverage category, divided by the total caffeine reported by a respondent on a given day, multiplied by 100.

Place of consumption: For each food and beverage item reported during the 24-hour dietary recall, the respondent is also asked if they consumed the product at home. This question was used to create a measure of the place of caffeine consumption, with the categories of "at home" and "not at home." Percentage of caffeine by place of consumption is computed as the caffeine consumed at home (or not at home), divided by the total caffeine reported by a respondent on a given day, multiplied by 100.

Where caffeine was obtained: For each food and beverage item reported during the 24-hour dietary recall, the respondent is also asked where they obtained the item. Percentage of caffeine by where it was obtained is computed as the caffeine consumed from a particular place or source (such as purchased in a grocery store or received from someone else or as a gift), divided by the total caffeine reported by a respondent on a given day, multiplied by 100.

Race and Hispanic origin: Youth categorized as Hispanic may be of any race or combination of races. Non-Hispanic youth categorized as Black or White indicated one race only. Estimates for non-Hispanic youth of races other than Black and White are not shown but are included in total estimates.

Data source and methods

Data from the August 2021–August 2023 National Health and Nutrition Examination Survey (NHANES) were used to produce estimates of caffeine consumption among U.S. youth. NHANES is a cross-sectional, nationally representative sample of the U.S. civilian noninstitutionalized population. The sample is selected through a complex, multistage probability design. NHANES consists of home interviews followed by standardized health examinations conducted in mobile examination centers (MECs) and two 24-hour dietary recall

interviews (7). During August 2021–August 2023, dietary interviews were completed by phone after the MEC examination instead of in person at the MEC as in previous cycles. More details and analyses of this change are available in a brief report (8).

This report uses the August 2021–August 2023 NHANES Day 1 dietary recall, which was collected using the U.S. Department of Agriculture's automated multiple pass method. For children ages 2–5, the recall was provided by a proxy, while children ages 6–11 were asked to self-report with the assistance of an adult. Adolescents ages 12–19 provided self-reported data, with a proxy assisting only if necessary (9).

All NHANES participants ages 2–19 who had reliable dietary recall data from the Day 1 interview were included in this analysis. Analyses were conducted using R version 4.4.0. Point estimates and standard errors were calculated using the survey and surveytable packages in R to account for NHANES's design. Day 1 dietary sample weights, which accounted for the day of the week and differential probabilities of selection, nonresponse, and noncoverage, were used to produce all estimates. Differences between pairs of estimates were evaluated using two-sided *t* tests at the 0.05 level. All proportion estimates meet National Center for Health Statistics data presentation standards for proportions (10).

About the authors

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Figure tables

Data table for Figure 1. Percentage of youth ages 2–19 who consumed caffeine on a given day, by age group, sex, and race and Hispanic origin: United States, August 2021–August 2023

Characteristic	Sample size	Percent	Standard error
Total	1,765	62.6	2.1
Age group (years)			
2–5	398	50.0*	3.9
6–11	609	66.2	2.5
12–19	758	65.5	3.1
Sex			
Boys	873	62.6	3.1
Girls	892	62.6	1.8
Race and Hispanic origin			
White, non-Hispanic	716	68.6†	1.9
Hispanic	513	60.7§	3.0
Black, non-Hispanic	261	44.7	4.7

* Significantly lower than age groups 6–11 and 12–19 years ($p < 0.05$).
† Significantly higher than Hispanic and Black non-Hispanic youth ($p < 0.05$).
§ Significantly higher than Black non-Hispanic youth ($p < 0.05$).
NOTE: People of Hispanic origin may be of any race.
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Data table for Figure 2. Mean caffeine intake on a given day among youth ages 2–19, by age group: United States, August 2021–August 2023

Age group (years)	Sample size	Mean intake (mg per day)	Standard error
Total	1,765	19.4	1.9
2–5	398	5.0*	0.8
6–11	609	12.0†	1.2
12–19	758	30.7	3.2

* Significantly lower than age groups 6–11 and 12–19 years ($p < 0.05$).
† Significantly lower than age group 12–19 years ($p < 0.05$).
NOTE: Mg is milligrams.
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Data table for Figure 3. Top five sources of caffeine consumed on a given day by youth ages 2–19, by age group: United States, August 2021–August 2023

Age and food or beverage category	Sample size	Mean percent of total caffeine intake	Standard error
Ages 2–11			
Sweet bakery products	1,007	28.1	2.6
Flavored milk	1,007	17.4	1.6
Candy	1,007	16.3	2.4
Soda	1,007	11.7	1.4
Tea	1,007	9.6	1.5
Ages 12–19			
Soda	758	20.3	2.2
Sweet bakery products	758	19.1	2.8
Tea	758	14.6	2.4
Coffee	758	14.0	1.6
Candy	758	10.7	1.9

NOTE: Food and beverages are grouped using the U.S. Department of Agriculture's "What We Eat in America" categories.
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Data table for Figure 4. Percentage of caffeine consumed on a given day by youth ages 2–19, by place of consumption and top five places where caffeine was obtained: United States, August 2021–August 2023

Place of consumption and where caffeine was obtained	Sample size	Mean percent of total caffeine intake	Standard error
Place of consumption			
At home	1,765	67.8	1.0
Not at home	1,765	32.2	1.0
Top five places where caffeine was obtained			
Grocery store	1,765	65.6	2.4
Fast-food restaurant	1,765	10.0	1.0
School cafeteria or day care center	1,765	7.2	1.2
Convenience store or vending machine	1,765	5.7	0.9
From someone else or gift	1,765	5.5	0.7

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Suggested citation

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