



Food Surveys Research Group
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Convenience Stores: Source of Food/Beverages among Adults

What We Eat in America, NHANES 2013-2016

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Highlights

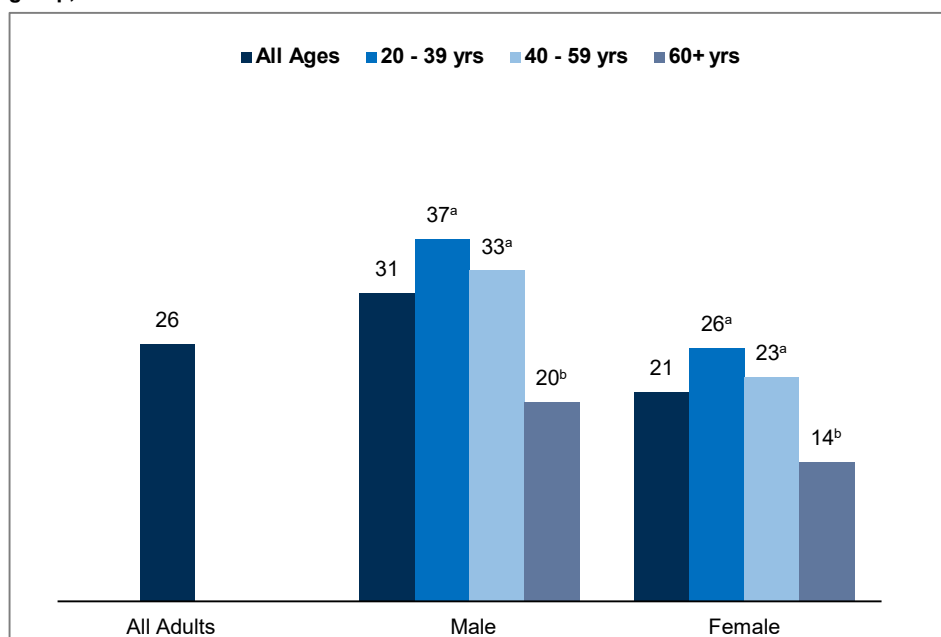
- On any given day, 1 out of 4 adults consumed at least one food and/or beverage from convenience stores with adults 60 years and older, less likely compared to younger adults.
- By race/ethnicity group, consumption of food/beverages from convenience stores was lowest among Asian adults.
- By family income, consumption of food/beverages from convenience stores was lowest among adults with family incomes $\geq 131\%$ of the federal poverty level.
- When consumed, food/beverages from convenience stores contributed about one-fifth of daily intake for energy and more than one-third of daily intake for added sugars.
- More than half of the daily energy intake obtained from convenience store food/beverages was consumed at snack occasions.

In the U.S. there are about 150,000 convenience stores, more than three times the number of grocery stores (1,2). Food and beverage sales in convenience stores have increased over the past several years (2,3). This report presents results on convenience stores as a source of food and beverage consumption among U.S. adults, 20 years and older, using data from What We Eat in America, NHANES 2013 – 2016. For this report, convenience stores also include dollar stores, drug stores, gas stations, gift shops and liquor/beer stores.

What percentage of adults consumed food/beverages from convenience stores?

Overall, 26% of U.S. adults consumed at least one food and/or beverage, excluding plain bottled water, obtained from a convenience store on any given day. The percentage was greater for males (31%) than females (21%). Regardless of gender, a lower percentage of older adults (60+ years) consumed an item from a convenience store.

Figure 1. Percentage of adults consuming food/beverages from convenience store, by age group, 2013-2016



^{a,b} Within gender, percentages with different superscript letters are significantly different, $p < 0.01$

SOURCE: What We Eat in America, NHANES 2013-2016, day 1, individuals 20+ years, excluding pregnant and lactating women



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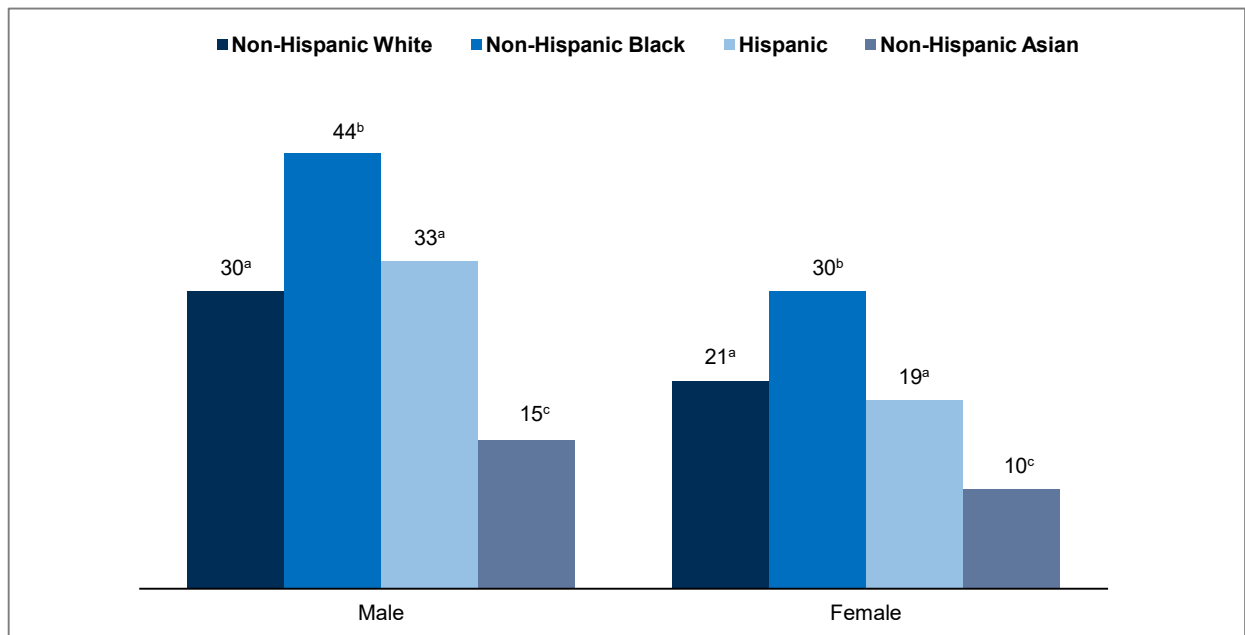
www.ars.usda.gov/nea/bhnrc/fsrg

Were there differences by race/ethnicity in consuming food/beverages from convenience stores?

The percentage of adults consuming food/beverages obtained from a convenience store differed by race/ethnicity. Overall, a greater percentage of non-Hispanic black adults (36%) consumed such an item compared to Hispanic adults (26%), non-Hispanic white adults (25%) and Asian adults (13%) (*data not shown*).

Among males, the highest prevalence of consumption of food/beverages from convenience stores was among non-Hispanic blacks (44%) and the lowest prevalence was among non-Hispanic Asians (15%). Results were similar for females although proportionately lower.

Figure 2. Percentage of adults consuming food/beverages from convenience store by race/ethnicity, 2013-2016



^{a,b,c} Within gender, percentages with different superscript letters are significantly different, $p < 0.01$

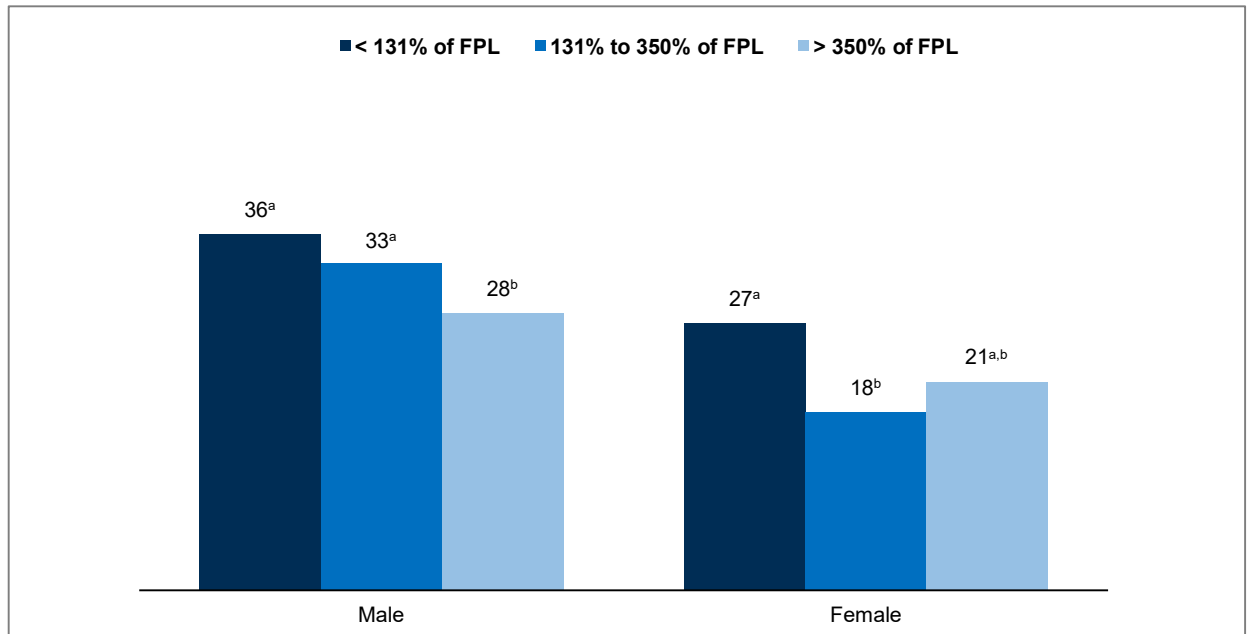
SOURCE: What We Eat in America, NHANES 2013-2016, day 1, individuals 20+ years, excluding pregnant and lactating women

Were there differences by family income in consuming food/beverages from convenience stores?

Overall, 31% of adults with family incomes less than 131% of the federal poverty level (FPL) consumed food/beverages from a convenience store compared to 25% for both adults with family incomes 131% to 350% of FPL and with family incomes greater than 350% of FPL (*data not shown*). Results differed by gender.

Among males, a greater percentage of adults with family incomes either less than 131% of FPL or 131% to 350% of FPL consumed a food/beverage from a convenience store compared to adult males with family incomes greater than 350% of FPL. Among females, a greater percentage of adults with family incomes less than 131% of FPL consumed an item from a convenience store compared to adult females with family incomes 131% to 350% of FPL.

Figure 3. Percentage of adults consuming food/beverages from convenience store by family income, 2013-2016



^{a,b} Within gender, percentages with different superscript letters are significantly different, $p < 0.01$

FPL is federal poverty level

SOURCE: What We Eat in America, NHANES 2013-2016, day 1, individuals 20+ years, excluding pregnant and lactating women

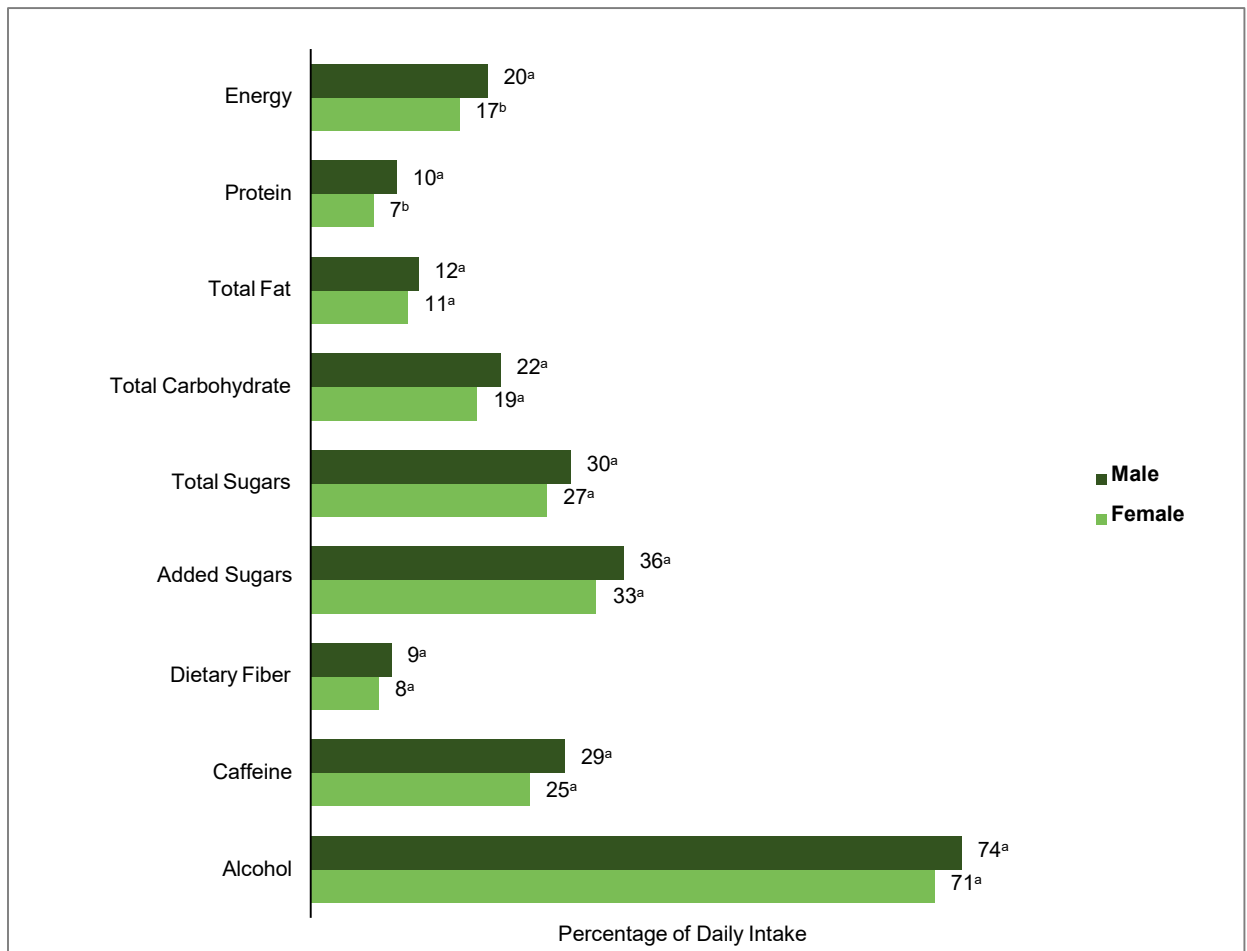
For convenience store reporters, what percentage of energy and other nutrients comes from food/beverages obtained from convenience stores?

For the U.S. population, food/beverages obtained from convenience stores contributed 5.6% of the total energy for all adults (*data not shown*). This report will now present results for “convenience store reporters” (the 26% of adults who consumed at least one food and/or beverage from a convenience store).

Among convenience store reporters, an average of 457 calories (19% of total daily energy intake) came from food/beverages from convenience stores. Males consumed a greater percentage of their daily energy intake (20%) from convenience store items than females (17%).

Relative to energy contribution, food/beverages from convenience stores provided higher percentages of the day’s total intake for total sugars, added sugars, caffeine and alcohol. On the day consumed, food/beverages from convenience stores contributed over one-third of the day’s intake of added sugars. Added sugars include sugars added during processing; total sugars include all sugars – both naturally occurring and added. Among both male and female convenience store reporters, more than 70% of their daily intake of alcohol was from items obtained at some type of convenience store, which includes beer/liquor stores.

Figure 4. Percentage of daily intake of energy and selected nutrients contributed by food/beverages obtained from convenience stores among adult convenience store reporters, by gender, 2013-2016



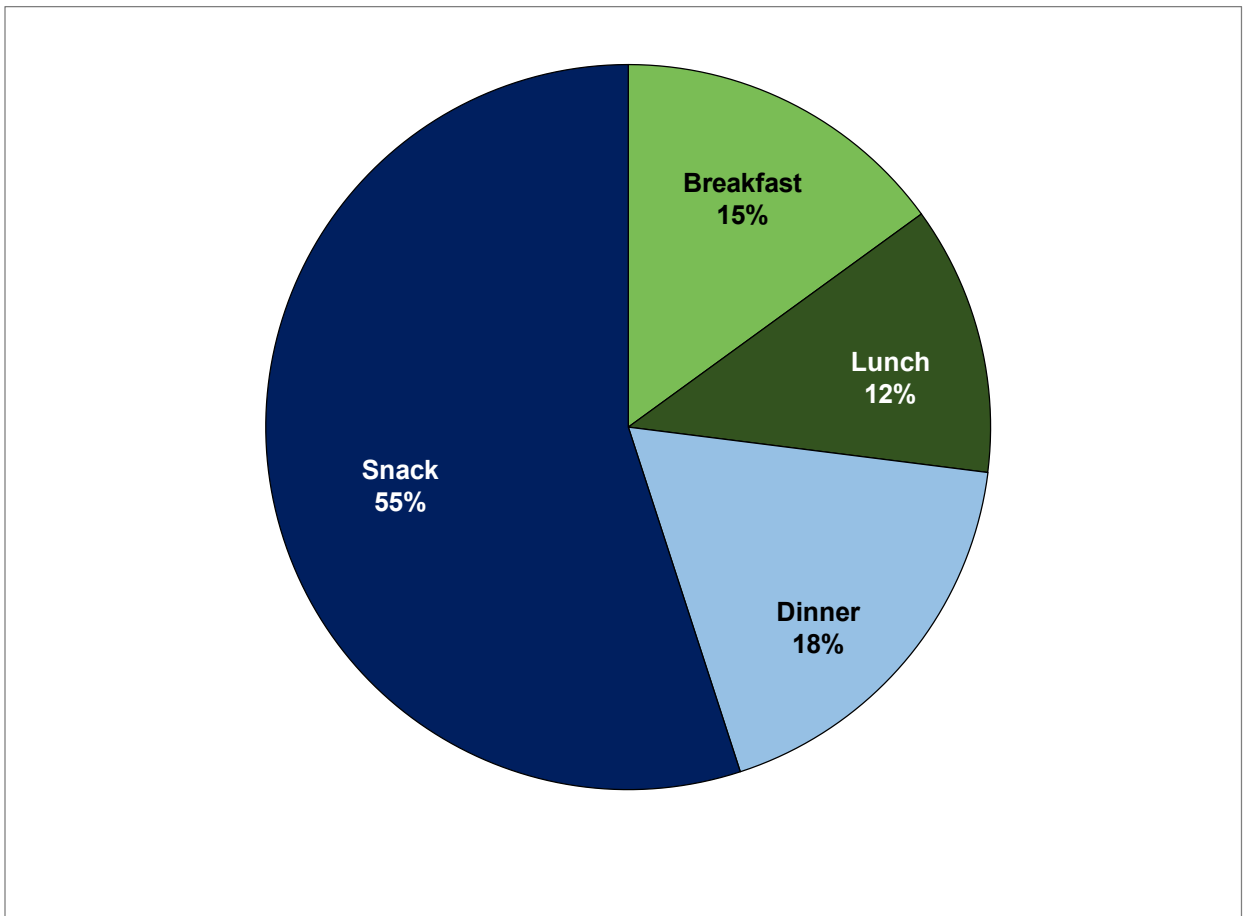
^{a,b} Within energy/nutrient, percentages with different superscript letters are significantly different, p<0.01

SOURCES: What We Eat in America, NHANES 2013-2016, day 1, individuals 20+ years, excluding pregnant and lactating women; FPED 2015-2016

Energy intake from food/beverages from convenience stores: At what eating occasions is most energy consumed?

Among convenience store reporters, the 457 calories obtained were distributed over meals and snack occasions. On the day consumed, 55% of energy consumption from these items occurred during snack occasions. For meals, energy consumption was 15%, 12% and 18% during breakfast, lunch and dinner, respectively. Results were similar for males and females.

Figure 5. Percentage of daily energy intake of food/beverages from convenience stores among adult convenience store reporters by eating occasion, 2013-2016



SOURCE: What We Eat in America, NHANES 2013-2016, day 1, individuals 20+ years, excluding pregnant and lactating women

Definitions

Convenience Store: During the 24-hour dietary recall, respondents were asked the source (where obtained) for each food/beverage reported. Items reported with the source of “Store – convenience type” include but are not limited to: convenience-type store, dollar store, drug store, gas station, gift shop, liquor/beer store.

Convenience Store Reporter: An adult who reported consuming at least one food and/or beverage (excluding plain bottled water), in any amount, from a convenience store at least once on the intake day.

Eating Occasion: A distinct eating/drinking occurrence reported during the 24-hour dietary interview that consists of one or more food/beverage items (excluding plain water). The name of the eating occasion was selected from a fixed list provided during the interview. English and Spanish eating occasion names were grouped as follows:

Breakfast: breakfast, desayuno, and almuerzo

Lunch: brunch, lunch, and comida

Dinner: dinner, supper, and cena

Snack: snack, drink, extended consumption (items consumed over a long period of time), merienda, entre comidas, botana, bocadillo, tentempie, and bebida (excluding plain water)

Federal Poverty Level (FPL): The Department of Health and Human Services’ poverty guidelines, used for determining financial eligibility for certain federal programs (5).

Data Sources

Estimates in this report are based on one day of dietary intake data collected in *What We Eat in America* (WWEIA), the dietary interview component of the National Health and Nutrition Examination Survey (NHANES), in 2013-2016 (5). Dietary intake of food and beverages were obtained from an in-person 24-hour recall, collected using the interviewer-administered 5-step USDA Automated Multiple-Pass Method. The study sample included 9,861 individuals (4,829 males and 5,032 females), ages 20 years and older (excluding pregnant and lactating women), with complete and reliable intakes. Sample weights were applied in all analyses to produce nationally representative estimates. Intakes of energy and nutrients were calculated using the 2013-2014 and 2015- 2016 versions of USDA’s Food and Nutrient Database for Dietary Studies (6) and Food Patterns Equivalents Database (7).

References

1. Volpe, Richard, Annemarie Kuhns, and Ted Jaenicke. 2017. Store Formats and Patterns in Household Grocery Purchases, EIB-167, U.S. Department of Agriculture, Economic Research Service. <https://www.ers.usda.gov/webdocs/publications/82929/eib-167.pdf?v=1193.5> Accessed June 8, 2020.
2. NACS State of the Industry 2019. <https://www.convenience.org/getattachment/Media/Press-Releases/2020/Convenience-Retail-Industry-Pivots-for-Long-C/2019-SOI-Numbers-Infographic.pdf?lang=en-US>. Accessed June 8, 2020.
3. CSP. NACS State of the Industry Summit 2015. <https://cdn.coverstand.com/20858/259643/0ec40c17dc5ad5f655780a772a47ec2a9641caf5.4.pdf>. Accessed June 8, 2020.
4. National Health and Nutrition Examination Survey. 2015-2016 Data Documentation, Codebook, and Frequencies. https://www.cdc.gov/Nchs/Nhanes/2015-2016/DEMO_I.htm#INDFMPIR.
5. Centers for Disease Control and Prevention, National Center for Health Statistics. NHANES Questionnaires, Datasets, and Related Documentation. <https://www.cdc.gov/nchs/nhanes/>.
6. FNDDS Documentation and Databases. www.ars.usda.gov/fsrg/fndds/download.
7. USDA Food Surveys Research Group. FPED Documentation and Databases. www.ars.usda.gov/fsrg/fped/download.

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