Snack Consumption by U.S. Adults

What We Eat in America, NHANES 2017 - March 2020

Food Surveys Research Group
Dietary Data Brief No. 53
April 2024

Rhonda S. Sebastian, MA; M. Katherine Hoy, EdD, RDN;
Joseph D. Goldman, MA, and Alanna J. Moshfegh, MS, RDN

Highlights

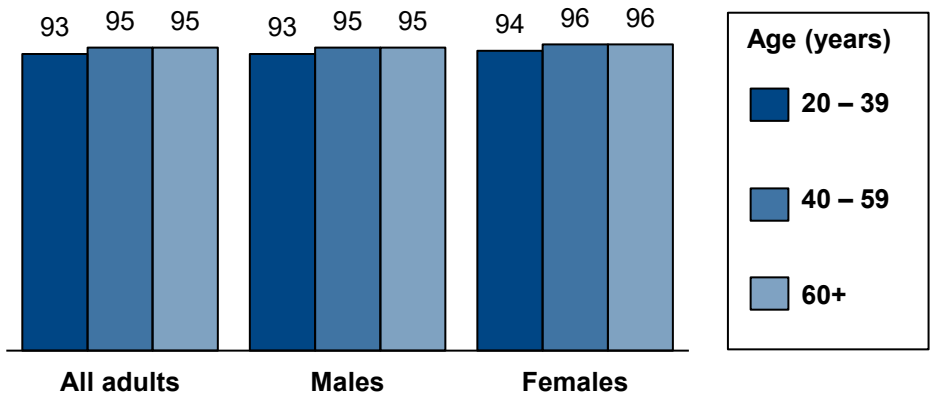
- On any given day, 95% of adults consume one or more snacks. Prevalence does not differ by gender or age.
- Non-Hispanic (NH) White adults are more likely to be snack consumers than are NH Black and Hispanic adults.
- Adults in the lowest category of family income have a lower prevalence of snack consumption compared to adults in the highest income category.
- The majority of adult snack consumers obtain less than 25% of their daily energy intake from snacks.
- Compared to non-consumers, snack consumers have higher intakes of vitamin C, potassium, and all macronutrients except protein.
- Among consumers, snacks provide on average 24% of daily intake of energy and 43% of added sugars.
- The most commonly consumed foods at snacks are sweet and savory items, and the most commonly consumed beverage is water.

From 1977 to the present, snacking has increased among U.S. adults in all age, race/ethnicity, and income groups *(1-3)*. Currently, consuming multiple snacks is the norm, with 78% consuming two or more on any given day *(1)*. Because of its high prevalence, snacking can have a notable impact on dietary intakes. For example, researchers have reported that dietary patterns that include snacks are characterized by higher energy intakes relative to patterns that do not include snacks *(4,5)*. The purpose of this report is to provide up to date summary statistics about snack consumption by the U.S. adult population. *(See page 8 for a definition of "snack".)* This analysis is based on one day of dietary intake data from What We Eat in America (WWEIA), National Health and Nutrition Examination Survey (NHANES) 2017- March 2020. It is one of four Dietary Data Briefs reporting information by meal type (breakfast, lunch, dinner, snack) for adults.

Who consumes snacks?

Among adults aged 20 years and older, 95% consume one or more foods and/or beverages at a snack on the intake day. This percentage is not different between males and females (94% versus 95%; $p > 0.001$). Moreover, as shown in Figure 1, the prevalence of snacking does not differ by age group overall or within gender.

Figure 1. Prevalence (%) of snack consumption among adults age 20+ years, by gender and age, WWEIA, NHANES 2017 - March 2020



SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

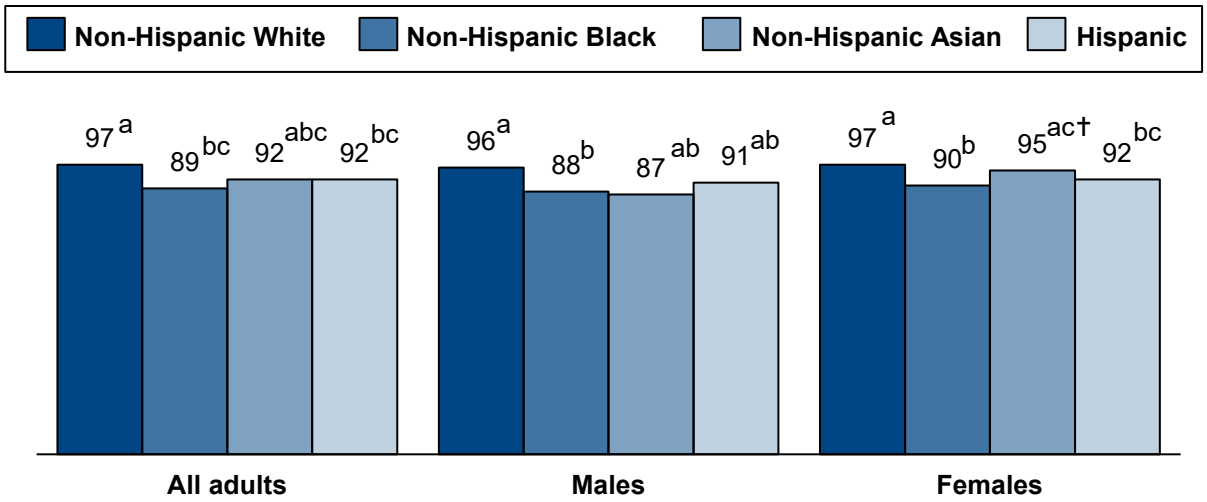
U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Beltsville Human Nutrition Research Center
Food Surveys Research Group

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

Does the prevalence of snack consumption differ by race/ethnicity or family income?

Among all adults and by gender, non-Hispanic White adults are more likely to consume a snack than are non-Hispanic Black adults (Figure 2). The prevalence of snack consumption by non-Hispanic White adults is also higher than that of Hispanic adults overall and among females.

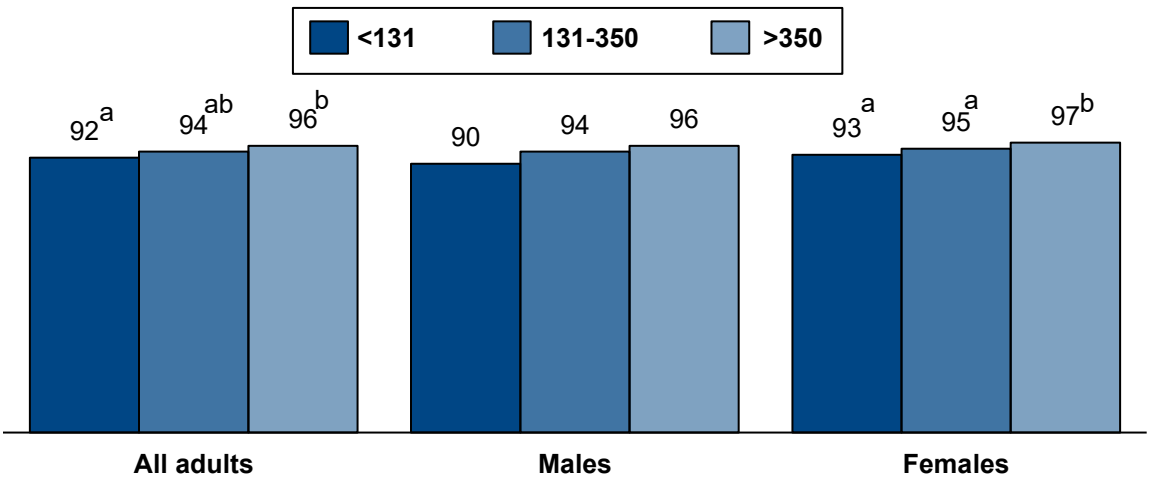
Figure 2. Prevalence (%) of snack consumption among adults age 20+ years, by gender and race/ethnicity, WWEIA, NHANES 2017- March 2020



[a,b,c]For all adults and by gender, estimates with different superscripts differ significantly by race/ethnicity (p<0.001) based on a two-tailed t-test.
[†]Estimate is less precise than others due to small sample size.
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

As shown in Figure 3, prevalence of snacking is higher among all adults and among females in the highest category of family income versus those in the lowest category. *(See definition of "family income" on page 8.)*

Figure 3. Prevalence (%) of snack consumption among adults age 20+ years, by gender and family income as % of poverty level[1], WWEIA, NHANES 2017- March 2020



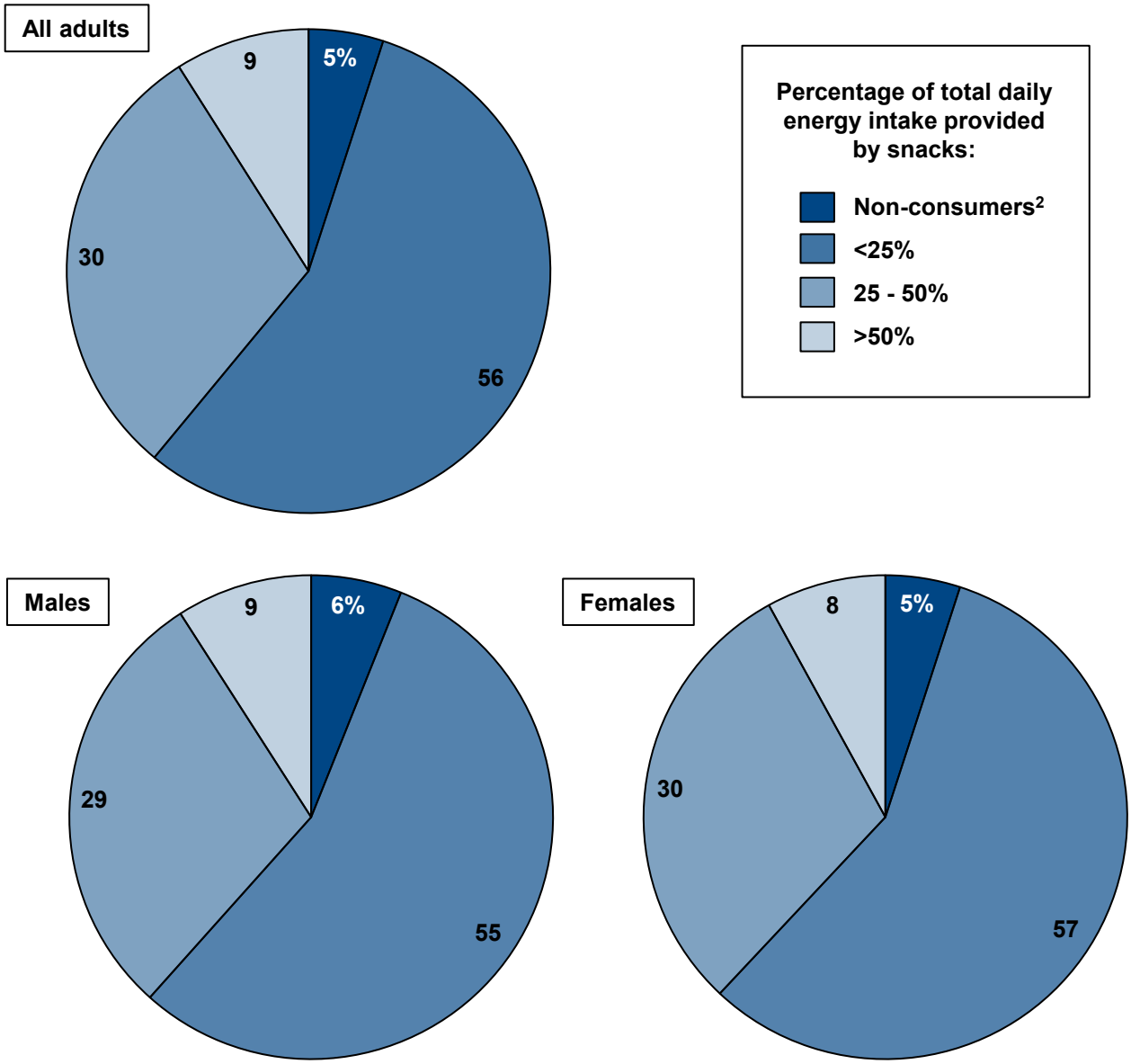
[a,b]For all adults and by gender, estimates with different superscripts differ significantly by family income (p<0.001) based on a two-tailed t-test.
[1]Ratio of family income to the federal poverty guidelines expressed as a percentage. See definition of "family income" on page 8.
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

What percentage of total daily energy is consumed at snacks?

Foods and beverages consumed at snacks account for 23% of total daily energy intake by U.S. adults overall *(data not shown)*.

Energy intake from snacks as a percentage of total daily intake is shown in Figure 4. The majority of adults obtain less than a quarter of their daily energy intake at snacks. In fact, about one in ten adults are snack consumers but do not obtain *any* energy intake from snacks on the intake day *(data not shown)*. Conversely, nine percent consume more than half their daily energy at snacks. Findings by gender are similar to those of adults overall.

Figure 4. Percentage[1] of individuals by level of total daily energy intake from snacks, adults age 20+ years, by gender, 2017 – March 2020



[1]*Estimates may not sum to 100 due to rounding.*
[2]*See definition of "consumer/non-consumer" on page 8.*
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

Do total daily intakes of energy and nutrients differ between snack consumers and non-consumers?

Energy intakes by snack consumers are higher than that of non-consumers overall and by gender (Table 1). In addition, intakes of all macronutrients except protein and alcohol are higher among all adults and male and/or females who consumed a snack on the intake day as compared to non-consumers. Daily fruit intake, measured in cup equivalents, is more than 50% higher among snack consumers *(data not shown)*, which could account for consumers' higher daily intake of dietary fiber, vitamin C, and potassium.

Table 1. Mean daily intake of energy and selected nutrients by snack consumption[1] status among adults age 20+ years, all and by gender, 2017 – March 2020

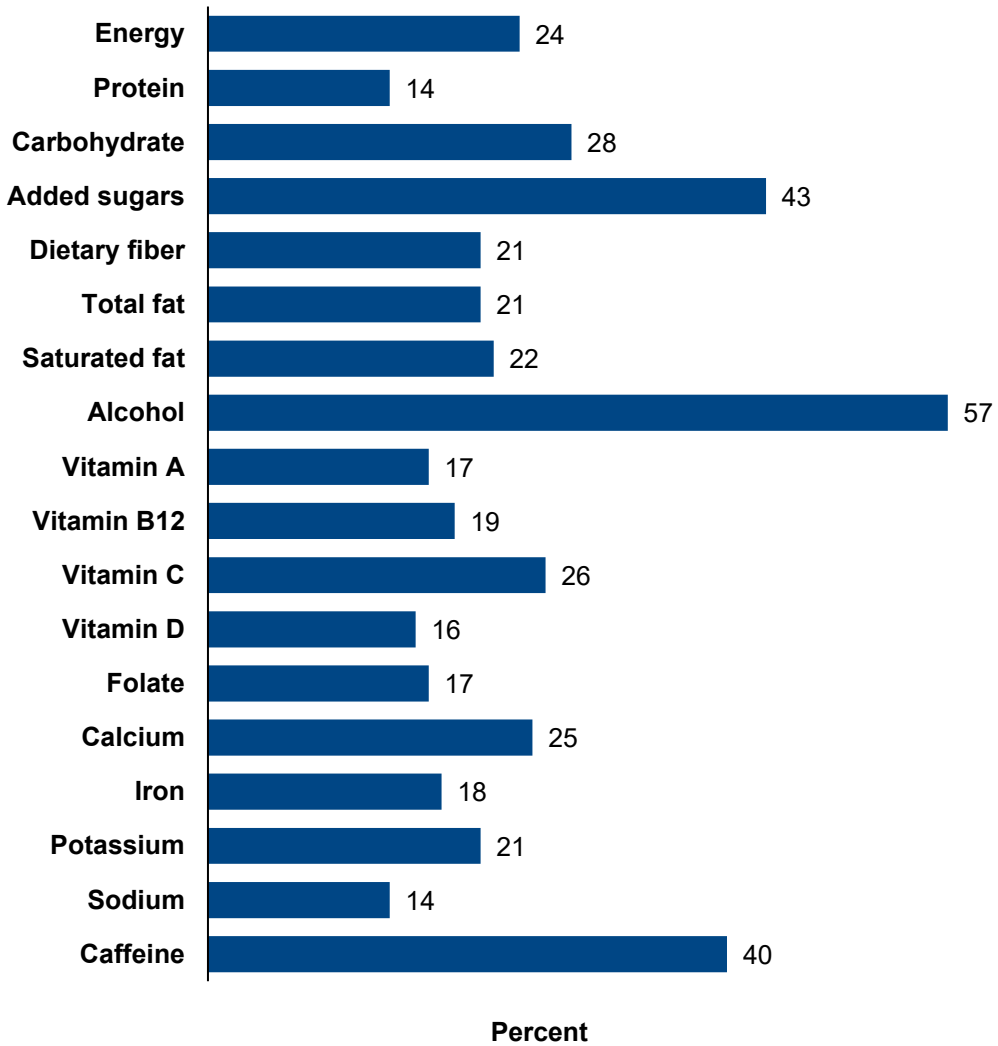
Energy/Nutrient	All adults		Males		Females	
	C	NC	C	NC	C	NC
Energy (kcal)[2]	2160*	1856	2506*	2114	1842*	1573
Macronutrients/food components:						
Protein (g)	81	76	95	88	69	62
Carbohydrate (g)	246*	209	282*	240	213*	176
Added sugars (tsp eq.)	17*	14	20*	15	14	12
Dietary fiber (g)	17*	13	18	15	15*	11
Total fat (g)	89*	76	102*	83	77	68
Saturated fat (g)	29*	25	33*	27	25	23
Alcohol (g)	11	7	15	10	7	3†
Vitamins:						
Vitamin A (mcg RAE)	635	528	665	583	607	469
Vitamin B12 (mcg)	5	4	6	5	4*	3
Vitamin C (mg)	78*	61	83	67	74*	55
Vitamin D (mcg)	4	4	5	5	4	3
Folate (mcg DFE)	485	431	555	520	420*	333
Minerals:						
Calcium (mg)	954	802	1067	897	850	697
Iron (mg)	14	12	16	14	12*	10
Potassium (mg)	2619*	2178	2925*	2503	2339*	1823
Sodium (mg)	3478	3199	4043	3628	2958	2728

Abbreviations: C, consumer; NC, non-consumer; kcal, kilocalories; g, grams; tsp eq, teaspoon equivalents; mcg, micrograms; RAE, retinol activity equivalents; mg, milligrams; DFE, dietary folate equivalents.
[1]See definition of "consumer/non-consumer" on page 8.
[2]See definition of "kilocalories" on page 8.
**Intake is significantly different by snack consumption status (p<0.001) based on a two-tailed t-test.*
†Estimate is less precise than others due to small sample size.
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

Among snack consumers, how much do snacks contribute to total daily intakes of energy and nutrients?

Snacks contribute 24% of consumer's daily intake of energy and 30% or less of nearly all nutrients analyzed (Figure 5). However, they account for 40% or more of total intake of added sugars, alcohol, and caffeine. Snacks contribute on average 7 teaspoon equivalents to added sugars intake, 6 grams to alcohol intake, and 70 milligrams to caffeine intake *(data not shown).*

Figure 5. Contributions of snacks to total daily intakes of energy and selected nutrients/food components, adults age 20+ years, consumers[1] only, 2017 – March 2020



[1]*See definition of "consumer/non-consumer" on page 8.*
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

What foods are consumed at snacks?

Sweet and savory items are predominant food choices at snacks (Table 2). Many of these foods are high in sugar and/or fat, which could in part explain the higher dietary intake of added sugars and total fat among snack consumers relative to non-consumers *(see Table 1 on page 4)*. Fruit is also popular, with about 1 in 5 consumers having one or more fruits at a snack. However, when it is consumed, fruit contributes only about one-third the energy of items in the "snacks and sweets" category.

Table 2. Foods frequently consumed at snacks: Percentage of adults consuming and mean energy contribution when consumed, age 20+ years, 2017 – March 2020

WWEIA Food Category	Consumers (%)	Mean energy contribution per consumer of a food from that WWEIA food category (kcal)[1]
Snacks and sweets	**62**	**336**
Sweet bakery products	22	347
Cookies and brownies	15	269
Savory snacks	21	215
Chips other than potato chips (e.g., tortilla, corn)	7	229
Potato chips	6	191
Candy	19	160
Ice cream and frozen dairy desserts	11	309
Crackers	9	169
Fruit	**21**	**124**
Bananas	6	129
Apples	5	119
Citrus fruits	4	90
Protein Foods	**16**	**299**
Nuts and seeds	11	317
Mixed dishes	**10**	**439**
Sandwiches	5	397
Dairy, excluding milk beverages[2]	**8**	**161**
Cheese	5	159
Grains	**7**	**324**
Vegetables	**5**	**173**

[1]*Kcal, kilocalories. See Definitions on page 8.*
[2]*See "WWEIA Food Categories" in the Definitions on page 8 for an explanation of this food group.*
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

What beverages are consumed at snacks?

Ninety-one percent of consumers have a beverage at a snack on the intake day (Table 3). Even though the most commonly consumed beverage is water, which is essentially non-caloric, beverages at snacks contribute on average 108 calories to daily energy intake of those who consume them. Sweetened beverages (e.g., soft drinks, fruit drinks, sport and energy drinks), contribute 266 kilocalories. Besides energy, these beverages contribute notable amounts of added sugars and caffeine, food components that are disproportionately obtained at snacks by consumers *(see Figure 5 on page 5)*.

Though fewer snack consumers report alcoholic than non-alcoholic beverages at snacks, mean energy intake from these items (i.e., beer, wine, and mixed drinks) is nearly four times higher than that of non-alcoholic beverages.

Table 3. Beverages frequently consumed at snacks: Percentage of adults consuming and mean energy contribution when consumed, 20+ years, 2017 – March 2020

WWEIA Food Category	Consumers (%)	Mean energy contribution per consumer of a beverage from that WWEIA food category (kcal)[1]
Beverages (nonalcoholic)[2]	**91**	**108**
Water	75	3
Coffee	21	82
Sweetened beverages	17	266
Tea	13	89
100% juice	4	155
Milk, plain	4	171
Beverages (alcoholic)	**14**	**397**

[1]Kcal, kilocalories. See Definitions on page 8.
[2]See "WWEIA Food Categories" in the Definitions on page 8 for an explanation of this food group.
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

Definitions

Kilocalories: Scientific unit used in reporting the energy content of food; shortened to "calories" in casual usage in the U.S.

Snack: eating occasions designated by the respondent as "snack," "drink," or the Spanish equivalents "merienda," "entre comida," "botana," "bocadillo," "tentempie,"and "bebida.". In addition, foods/beverages whose eating occasion was coded as "extended consumption" (items that were consumed over a long period of time), were considered snack occasions. The time an eating occasion occurs has no implication as its type, i.e., it is not considered to be a snack unless the respondent specified it as such.

Consumer/non-consumer: In general, anyone who reported a snack *(see definition above)* was considered a "consumer," whereas anyone who did not was considered a "non-consumer." In all, 7,106 adults were classified as snack consumers (3,415 males and 3,691 females), and 601 were classified as non-consumers (330 males and 271 females). Classification as a consumer or non-consumer for this analysis has no implications as to habitual consumption.

Family income (as percentage of poverty level): the ratio of family income to poverty expressed as a percentage. The Department of Health and Human Services' poverty guidelines were used as the poverty measure to calculate the ratio *(6)*.

WWEIA Food Categories: Available at *www.ars.usda.gov/Services/docs.htm?docid=23429* is a full list of the WWEIA Food Categories, a scheme for classifying each food and beverage reported in WWEIA, NHANES into one of 169 mutually exclusive categories. In contrast to the WWEIA Food Categories' item-by-item classification, this analysis classified as a group any foods or beverages that were represented in the dietary data by two or more items linked as having been consumed together. In such cases, all of the linked items were classified together into the most appropriate WWEIA Food Category. For example, if chocolate syrup was consumed with ice cream, it was assigned to the "ice cream and frozen dairy desserts" group in this analysis. Another difference from the WWEIA Categories concerned the beverage analysis on page 7. In the WWEIA Food Categories, water and milk/milk beverages are included under "Water" and "Milk and dairy", respectively. In this analysis, they are included under "Beverages, nonalcoholic". The non-beverage dairy categories, namely, cheese and yogurt, are represented on page 6 as "Dairy, excluding milk beverages".

Data source

Estimates in this data brief are based on one day of dietary intake data from WWEIA, NHANES 2017-March 2020 *(7)*. Day 1 dietary data were collected in person using the 5-step USDA Automated Multiple-Pass Method for the 24-hour recall. A total of 7,707 individuals 20 years of age and older (3,745 males and 3,962 females) provided complete and reliable dietary intake data. In the race-specific analyses (see page 2), individuals who were multi-racial or of a racial group other than those listed (368 adults, of whom 342 were snack consumers) were excluded. Likewise, in the income-specific analyses (also on page 2), individuals with missing family income information (971 adults, of whom 869 were snack consumers) were excluded. Sample weights were applied in all analyses to produce nationally representative estimates. Intakes of energy and nutrients were calculated using the 2017-2018 and 2019-2020 versions of USDA's Food and Nutrient Database for Dietary Studies *(8)*. Intake of added sugars was calculated using the Food Patterns Equivalents Database for Use with WWEIA, NHANES 2017-March 2020 Prepandemic *(9)*.

References

1. USDA Food Surveys Research Group. *2017- March 2020 Prepandemic Tables.* *https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/food-surveys-research-group/docs/wweia-data-tables/.* Accessed January 24, 2024.
2. USDA, Human Nutrition Research Service. *Nutrient Intakes: Individuals in 48 States, Year 1977-78. Nationwide Food Consumption Survey 1977-78 Report No. I-2.* https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/7778/nfcs7778_rep_i-2.pdf. Accessed January 24, 2024.
3. Dunford EK, Popkin BM. Disparities in snacking trends in US adults over a 35 year period from 1977 to 2012. *Nutrients*. 2017;9(8):809. Published 27 July 2017 doi:10.3390/nu9080809.
4. Kant AK, Graubard BI. Within-person compensation for snack energy by US adults, NHANES 2007-2014. *Am J Clin Nutr.* 2019;109(4):1145-1153. doi:10.1093/ajcn/nqy349.
5. Nicklas TA, O'Neil CE, Fulgoni VL 3rd. Snacking patterns, diet quality, and cardiovascular risk factors in adults. *BMC Public Health.* 2014;14:388. Published 2014 Apr 23. doi:10.1186/1471-2458-14-388.
6. U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. Poverty guidelines. https://aspe.hhs.gov/poverty-guidelines. Accessed January 19, 2024.
7. Centers for Disease Control and Prevention, National Center for Health Statistics. *NHANES Questionnaires, Datasets, and Related Documentation.* https://wwwn.cdc.gov/nchs/nhanes/. Accessed January 16, 2024.
8. USDA Food Surveys Research Group. *FNDDS Documentation and Databases.* www.ars.usda.gov/fsrg/fndds/download. Accessed January 25, 2024.
9. USDA Food Surveys Research Group. *Food Patterns Equivalents Databases and SAS Datasets.* www.ars.usda.gov/fsrg/fped/download. Accessed January 25, 2024.

About the authors

Rhonda S. Sebastian, M. Katherine Hoy, Joseph D. Goldman, and Alanna J. Moshfegh are with the Food Surveys Research Group, Beltsville Human Nutrition Research Center, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD.

Suggested citation

Sebastian RS, Hoy MK, Murayi T, Goldman JD, Moshfegh AJ. *Snack Consumption by U.S. Adults: What We Eat in America, NHANES 2017-March 2020.* Food Surveys Research Group Dietary Data Brief No. 53. April 2024.

Copyright information

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Beltsville Human Nutrition Research Center
Food Surveys Research Group
www.ars.usda.gov/nea/bhnrc/fsrg