Breakfast Consumption by U.S. Adults

What We Eat in America, NHANES 2017 - March 2020

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

Food Surveys Research Group
Dietary Data Brief No. 59
April 2024

Highlights

- Eighty-five percent of adults consume breakfast on the intake day, with a higher prevalence among those 60+ years relative to those <60 years.
- A lower percentage of non-Hispanic Black adults consume breakfast relative to other race/ethnic groups.
- Breakfast prevalence is higher among adults with family incomes >130% of the poverty level relative to those below that level.
- Approximately one in five adults obtains more than 30% of their daily energy intake from breakfast.
- Compared to non-consumers, breakfast consumers have higher intakes of energy and nearly all nutrients studied.
- Among consumers, breakfast account for an average of 21% of energy intake and comparable amounts of most nutrients.
- The food category most commonly consumed at breakfast is grain products, and the most commonly consumed beverage is coffee.

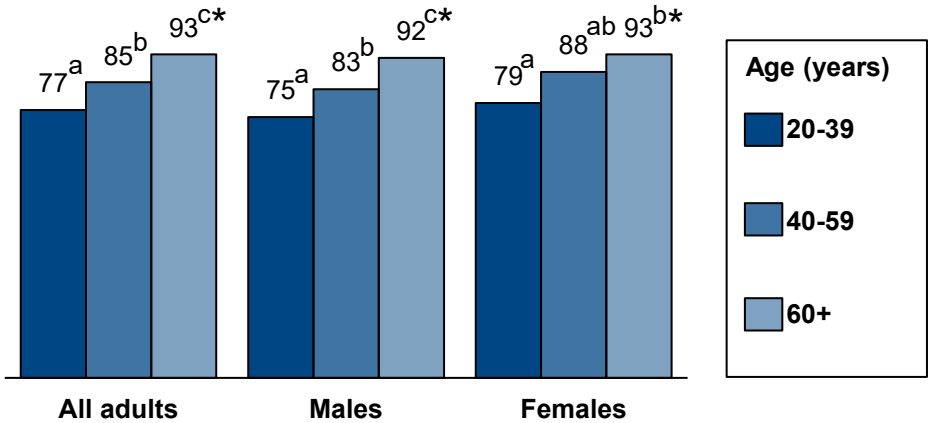
Breakfast is often referred to as the most important meal of the day. Research shows that individuals who consume breakfast have more favorable nutrient intakes *(1,2)* and higher overall diet quality *(1-3)*. Moreover, habitually skipping breakfast has been associated with elevated risk of numerous chronic health conditions, including obesity, type 2 diabetes, and cardiovascular disease *(4-6)*. The purpose of this report is to provide up-to-date information on breakfast consumption by the U.S. adult population. *(See page 8 for a definition of "breakfast".)* 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 three Dietary Data Briefs reporting information by meal type (breakfast, lunch, dinner, snack) for adults.

Who consumes breakfast?

On any given day, 85% of adults aged 20 years and older consume one or more foods and/or beverages at breakfast.

The prevalence of breakfast consumption does not differ between males and females (83% versus 86%; p>0.001; *data not shown*). However, it does vary by by age group (Figure 1). Adults 60+ years are more likely to consume breakfast than those 20-39 years (all, males, females) and those 40-59 years (all, males).

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



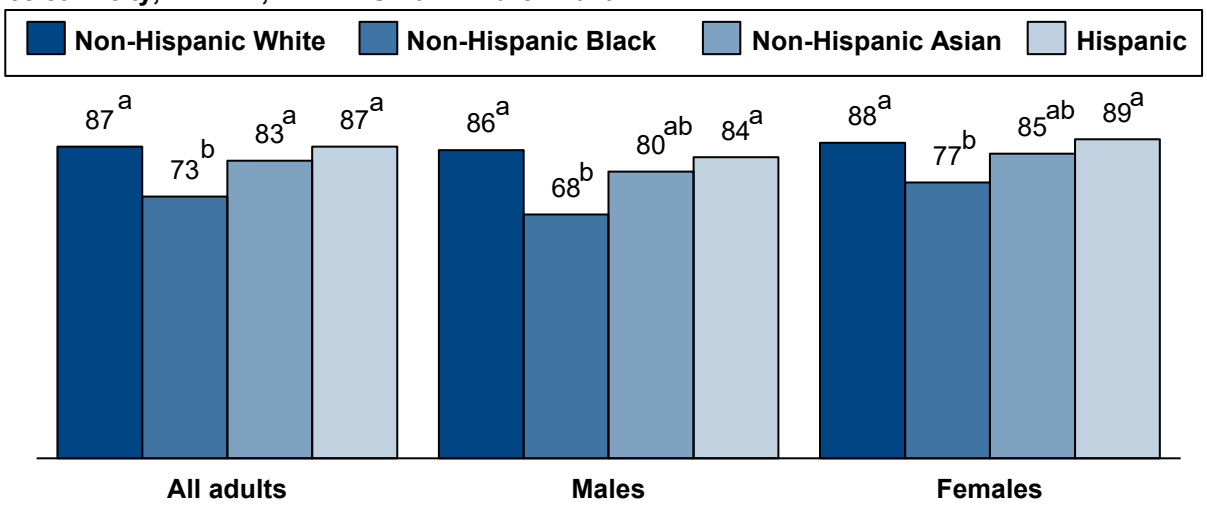
a,b,cFor all adults and by gender, estimates with different superscripts differ significantly by age group (p <0.001) based on a two-tailed t-test.
**Postive linear trend in breakfast consumption by age (p<0.001) based on regression analysis.*
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 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 breakfast consumption differ by race/ethnicity or family income?

Among all adults, a lower percentage of non-Hispanic (NH) Black adults consume foods/beverages at breakfast than do NH White, NH Asian, and Hispanic adults (Figure 2). Findings by gender mirror those for all adults, except breakfast prevalence of NH Black adults is not statistically different (p>0.001) from NH Asian adults for either males or females.

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

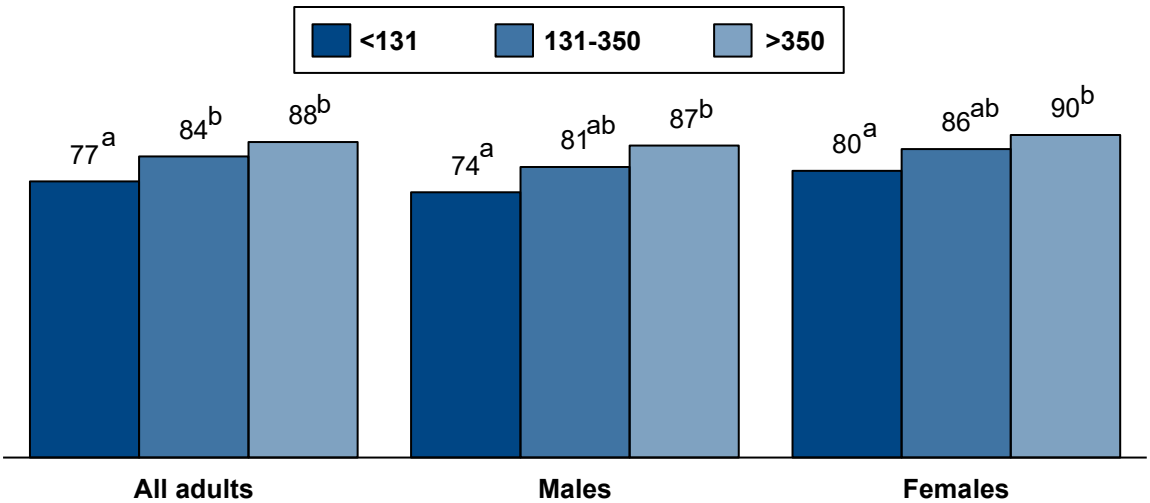


a,b For all adults and by gender, estimates with different superscripts differ significantly by race/ethnicity (p<0.001) based on a two tailed t-test.

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

As shown in Figure 3, adults in the middle- and highest- family income categories are more likely to consume breakfast than are adults in the lowest family income category. By gender, differences are seen among those in the highest and lowest family income categories only.

Figure 3. Prevalence (%) of breakfast 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.

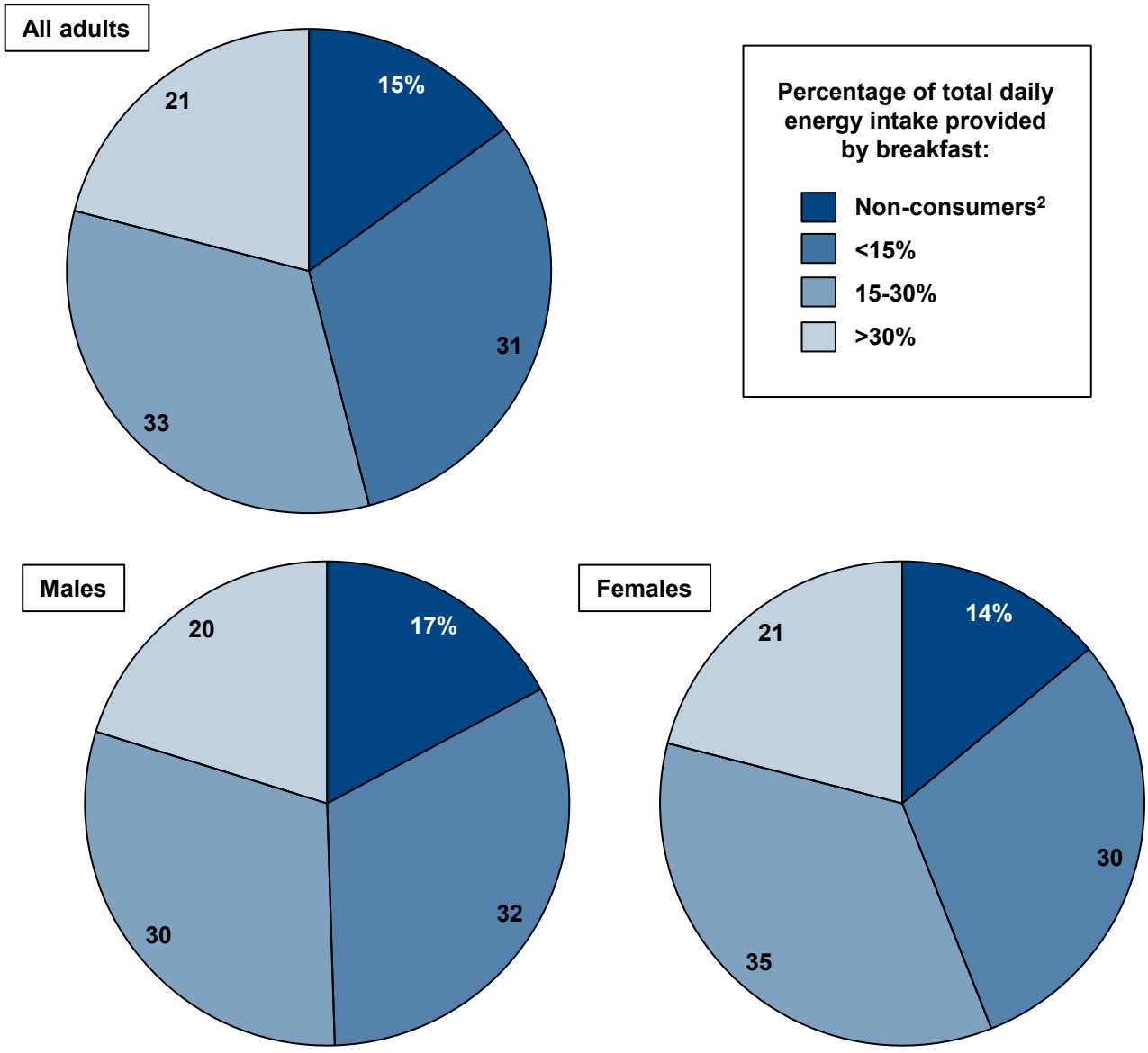
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

What percentage of total daily energy is consumed at breakfast?

Breakfast consumption accounts for 18% of total daily energy intake by U.S. adults overall *(data not shown)*.

Energy intake from breakfast as a percentage of total daily intake categorized into levels is shown in Figure 4 for all adults and by gender. Approximately two-thirds of adults are breakfast consumers but obtain no more than 30% of their total daily intake from this meal, whereas one in five obtain more than 30%. Findings by gender are similar to those for adults overall.

Figure 4. Percentage[1] of individuals by level of total daily energy intake from breakfast, 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 breakfast consumers and non-consumers?

Among all adults, intake of energy, protein, dietary fiber, total fat, and saturated fat is higher for breakfast consumers than for non-consumers (Table 1). Conversely, added sugar intake is lower among consumers. Nearly all these differences are also seen among males. Among females, dietary fiber intake is higher among breakfast consumers.

Relative to non-consumers, mean daily intakes of all vitamins and minerals shown are higher among adult breakfast consumers. When males and females are analyzed separately, intakes are higher among consumers as compared to non-consumers for either one or both genders.

Table 1. Mean daily intake of energy and selected nutrients by breakfast 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]	2164*	2031	2526*	2281	1843	1735
Macronutrients/food components:						
Protein (g)	83*	72	97*	80	70	63
Carbohydrate (g)	245	236	283	264	212	204
Added sugars (tsp eq.)	16*	20	18	23	14	17
Dietary fiber (g)	17*	13	19*	13	16*	12
Total fat (g)	90*	79	104*	86	77	71
Saturated fat (g)	29*	26	34*	28	25	23
Vitamins:						
Vitamin A (mcg RAE)	665*	434	708*	435	626*	431
Vitamin B12 (mcg)	5*	4	6	5	4*	3
Vitamin C (mg)	81*	60	87*	55	75	65
Vitamin D (mcg)	5*	3	5	3	4*	3
Folate (mcg DFE)	497*	403	575*	450	427*	346
Minerals:						
Calcium (mg)	976*	779	1099*	853	866*	691
Iron (mg)	14*	11	17*	13	12*	10
Potassium (mg)	2672*	2178	3020*	2329	2363*	1998
Sodium (mg)	3507*	3220	4115*	3564	2968	2810

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 "kilocalorie" on page 8.

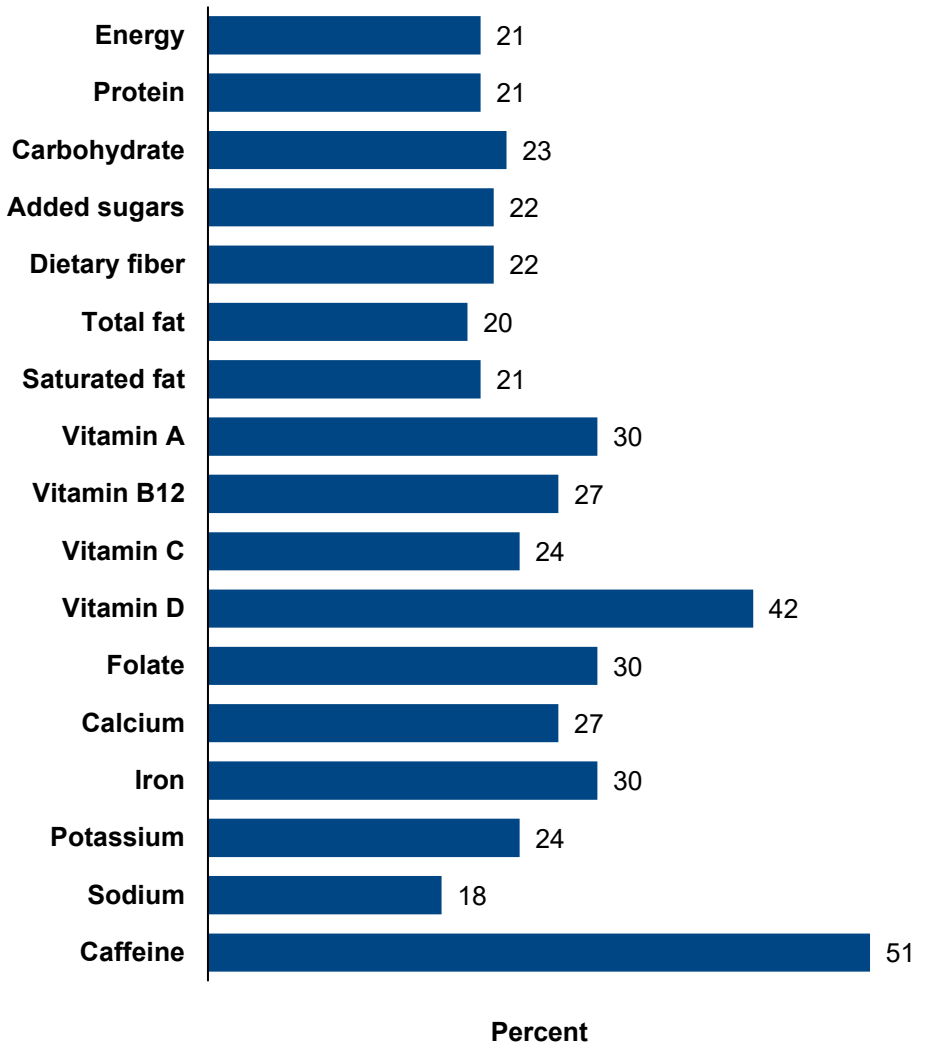
**Intake is significantly different by breakfast consumption status (p<0.001) based on a two-tailed t-test.*

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

Among breakfast consumers, how much does breakfast contribute to total daily intakes of energy and nutrients?

Breakfast foods and beverages make considerable contributions to total daily intakes among adult breakfast consumers (Figure 5). About one-fifth of daily energy is consumed at breakfast, as well as about 20-25% of daily intake of food components and nutrients. However, for some nutrients, namely, vitamin A, folate, iron, and particularly vitamin D, items consumed at this meal account for 30% or more of total intake. In addition, about half of all caffeine is consumed at breakfast.

Figure 5. Contributions of breakfast 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 breakfast?

The most commonly consumed foods at breakfast are shown in Table 2. Grain products are reported by the highest percentage of breakfast consumers. However, mixed dishes contribute the largest mean amount of energy to intakes of those who consume them - 463 kilocalories. In contrast, when fruit is consumed at breakfast, it contributes about 100 kilocalories.

Table 2. Foods frequently consumed at breakfast: 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]
Grains	**43**	**312**
Bread, rolls, tortillas	17	217
Ready-to-eat cereals	14	332
Cooked cereals	7	277
Pancakes, waffles, French toast	4	460
Biscuits, muffins, quick breads	3	345
Protein foods	**24**	**259**
Eggs and omelets	18	202
Bacon	4	111
Sausages	3	178
Mixed dishes	**21**	**463**
Egg/breakfast sandwiches	8	496
Peanut butter and jelly sandwiches	3	358
Snacks and sweets	**13**	**268**
Doughnuts, sweet rolls, pastries	4	357
Snack/meal bars	3	169
Fruit	**13**	**108**
Bananas	6	114
Apples	2	132
Vegetables	**7**	**192**
French fries and other fried potatoes	4	238
Dairy, excluding milk beverages[2]	**5**	**181**
Yogurt	4	186

[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 breakfast?

The majority (84%) of breakfast consumers have a beverage at this meal (Table 3). While beverage choices such as coffee and tea are naturally very low in calories, additions including milk, creamer, and caloric sweeteners such as sugar boost their energy content and thus contribution to intake. In addition, prepared coffee and tea drinks (e.g., cappuchino, kombucha) which often contain added sugars and/or fat, also contribute to the energy derived from these beverages.

Water is inherently non-caloric. However, enhanced and flavored water with added sweeteners and plain water with small amounts of energy-containing additions account for the small mean energy contribution of this food group.

Overall, among all adult breakfast consumers, beverages contribute on average 83 kilocalories, or about 18% of daily energy intake *(data not shown)*.

Table 3. Beverages frequently consumed at breakfast: 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]	**84**	**99**
Coffee	48	62
Water	26	7
Sweetened beverages	10	246
Tea	9	54
100% juice	7	120
Citrus juice	5	122
Milk, plain	5	180

[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.

Breakfast: meal occasions designated by the respondent as "breakfast" or the Spanish equivalents "desayuno" and "almuerzo". The time an eating occasion occurs has no implication as to the type of meal. An eating occasion reported during typical breakfast hours (i.e., morning) is not considered to be breakfast unless the respondent specified it as such.

Consumer/non-consumer: In general, anyone who reported breakfast *(see definition above)* was considered a "consumer," whereas anyone who did not was considered a "non-consumer." In all, 6,343 adults were classified as breakfast consumers (3,017 males and 3,326 females), and 1,364 were classified as non-consumers (728 males and 636 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 *(7).*

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, an egg, cheese and bacon sandwich represented in the dietary data as an English muffin, egg, bacon, cheese, and butter would be assigned to the "Egg/breakfast sandwiches" group, along with similar sandwiches that were not represented by multiple items, i.e., the "single-code sandwiches" that make up the WWEIA Food Category "mixed dishes - sandwiches (single code) – Egg/breakfast sandwiches." Similarly, if creamer was consumed with coffee, it was assigned to the coffee 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 *(8)*. 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 267 were breakfast consumers) were excluded. Likewise, in the income-specific analyses (also on page 2), individuals with missing family income information (971 adults, of whom 792 were breakfast 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 *(9)*. Intake of added sugars was calculated using the Food Patterns Equivalents Database for Use with WWEIA, NHANES 2017-March 2020 Prepandemic *(10).*

References

1. O'Neil CE, Nicklas TA, Fulgoni VL3rd. Nutrient intake, diet quality, and weight/adiposity parameters in breakfast patterns compared with no breakfast in adults: National Health and Nutrition Examination Survey 2001-2008. *J Acad Nutr Diet.* 2014;114(12 Suppl):S27-S43. doi:10.1016/j.jand.2014.08.021.
2. Deshmukh-Taskar PR, Radcliffe JD, Liu Y, Nicklas TA. Do breakfast skipping and breakfast type affect energy intake, nutrient intake, nutrient adequacy, and diet quality in young adults? NHANES 1999-2002. *J Am Coll Nutr* 2010;29(4):407-418. doi:10.1080/07315724.2010.10719858.
3. Drewnowski A, Rehm CD, Vieux F. Breakfast in the United States Food and nutrient intakes in relation to diet quality in National Health and Examination Survey 2011-2014. A study from the International Breakfast Research Initiative. *Nutrients.* 2018;10(9):1200. Published 2018 Sep 1. doi:10.3390/nu10091200.
4. Ma X, Chen Q, Pu Y, et al. Skipping breakfast is associated with overweight and obesity: A systematic review and meta-analysis. *Obes Res Clin Pract.* 2020;14(1):1-8. doi:10.1016/j.orcp.2019.12.002.
5. Ballon A, Neuenschwander M, Schlesinger S. Breakfast skipping is associated with increased risk of Type 2 diabetes among adults: A systematic review and meta-analysis of prospective cohort studies. *J Nutr.* 2019;149(1):106-113. doi:10.1093/jn/nxy194
6. St-Onge MP, Ard J, Baskin ML, et al. Meal timing and frequency: Implications for cardiovascular disease prevention: a scientific statement from the American Heart Association. *Circulation.* 2017;135(9):e96-e121. doi:10.1161/CIR.0000000000000476.
7. 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 May 10, 2023.
8. Centers for Disease Control and Prevention, National Center for Health Statistics. *NHANES Questionnaires, Datasets, and Related Documentation.* https://wwwn.cdc.gov/nchs/nhanes/ . Accessed August 15, 2023.
9. USDA Food Surveys Research Group. *FNDDS Documentation and Databases.* www.ars.usda.gov/fsrg/fndds/download. Accessed September 27, 2023.
10. USDA Food Surveys Research Group. *Food Patterns Equivalents Databases and SAS Datasets.* www.ars.usda.gov/fsrg/fped/download. Accessed September 29, 2023.

About the authors

Rhonda S. Sebastian, M. Katherine Hoy, Theophile Murayi, 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. *Breakfast Consumption by U.S. Adults: What We Eat in America, NHANES 2017-March 2020.* Food Surveys Research Group Dietary Data Brief No. 59. 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