



Food Surveys Research Group  
Dietary Data Brief No. 55  
April 2024

# Dinner 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

### Highlights

- ▶ On any given day, 91% of adults consume dinner. Prevalence does not differ by gender or age.
- ▶ Hispanic adults are less likely to consume dinner relative to non-Hispanic White and non-Hispanic Asian adults.
- ▶ Dinner prevalence is lower among adults with family incomes <131% of the poverty level relative to those above that level.
- ▶ Approximately 1 in 4 adults obtain more than half of their total daily energy intake from dinner.
- ▶ Intake of some nutrients, including most minerals, is higher among dinner consumers as compared to non-consumers.
- ▶ Among consumers, dinner provides an average of about one-third or more of total intake of energy and most nutrients.
- ▶ The food group most commonly consumed at dinner is mixed dishes, and the most commonly consumed beverage is water.

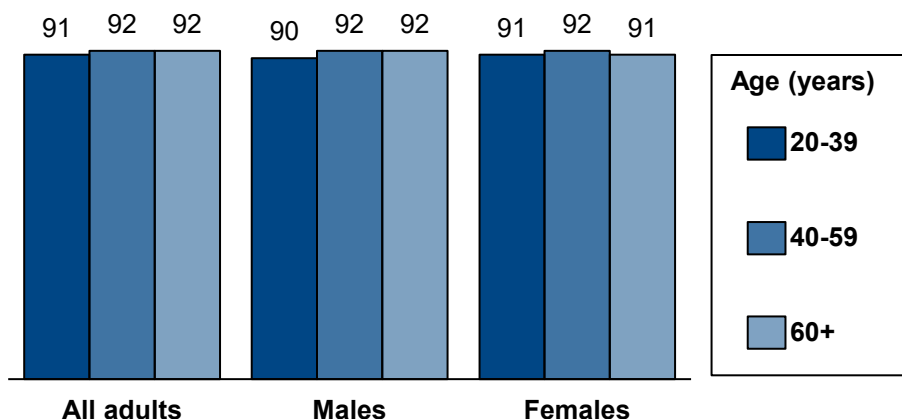
Dinner is generally considered the last major meal of the day. Past studies have shown that among all meals, it is the largest contributor to intake of vegetables (1-3) and dietary fiber (4,5). Only 10 percent of U.S. adults meet dietary recommendations for vegetable intake (6). Moreover, due to the implications of prevailing low intakes, the Dietary Guidelines for Americans have identified dietary fiber as a food component of public health concern (7). However, the impact of dinner on dietary intakes is not wholly beneficial. This meal also accounts for a substantial proportion of daily intake of overconsumed nutrients, namely, energy, saturated fat, and sodium (4,5,8). The purpose of this report is to provide an up-to-date, comprehensive overview of dinner consumption by the U.S. adult population. (See page 8 for a definition of “dinner”.) 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 dinner?

Overall, 91% of adults consume dinner on any given day.

Prevalence of dinner consumption does not differ by age among all adults or within gender (Figure 1). In addition, the percentage consuming dinner does not differ by gender (91% for both males and females; *not shown*).

**Figure 1. Prevalence (%) of dinner 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.



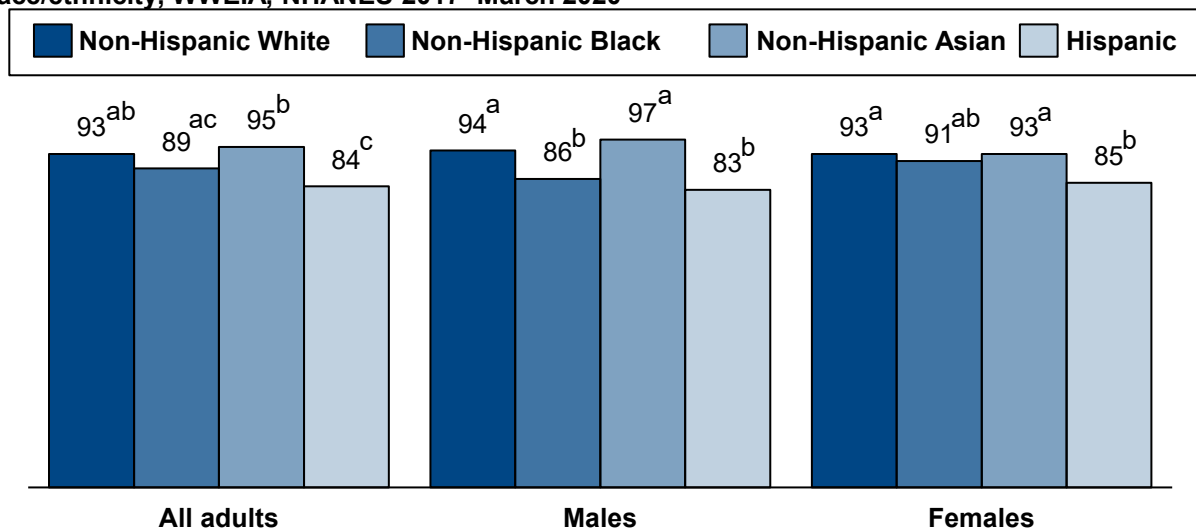
U.S. DEPARTMENT OF AGRICULTURE  
Agricultural Research Service  
Beltsville Human Nutrition Research Center  
Food Surveys Research Group

[www.ars.usda.gov/nea/bhnrc/fsrg](http://www.ars.usda.gov/nea/bhnrc/fsrg)

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

Among adults overall, Hispanic adults are less likely to consume dinner than Non-Hispanic (NH) White and NH Asian adults, and NH Black adults are less likely to do so relative to NH Asian adults only (Figure 2). The one consistent relationship seen among both males and females analyzed separately is the lower dinner prevalence of Hispanic adults as compared to NH White and NH Asian adults.

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

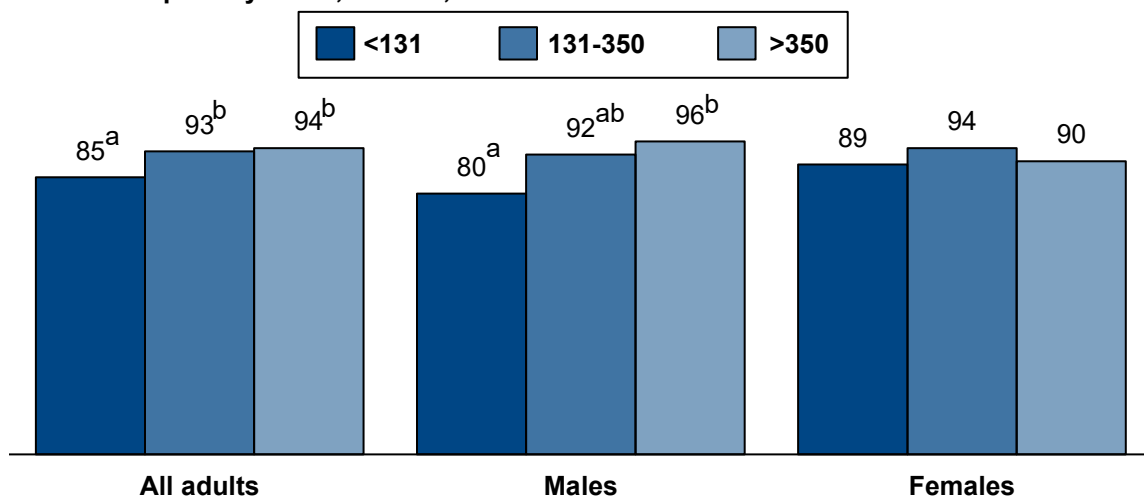


<sup>a,b,c</sup>For all adults and by gender, percentage estimates with different superscripts differ by race/ethnicity ( $p < 0.001$ ) based on a two-tailed t-test.

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

As illustrated in Figure 3, the percentage of adults who consume dinner varies by family income among all adults and among males, but not among females. For all adults, those in the lowest category of family income are less likely to consume dinner than those in either of the two higher categories.

**Figure 3. Prevalence (%) of dinner consumption among adults age 20+ years, by gender and family income as % of poverty level<sup>1</sup>, WWEIA, NHANES 2017- March 2020**



<sup>a,b</sup>For all adults and by gender, percentage estimates with different superscripts differ by family income ( $p < 0.001$ ) based on a two-tailed t-test.

<sup>1</sup>Ratio of family income to the federal poverty guidelines expressed as a percentage. See definition of “family income” on page 8.

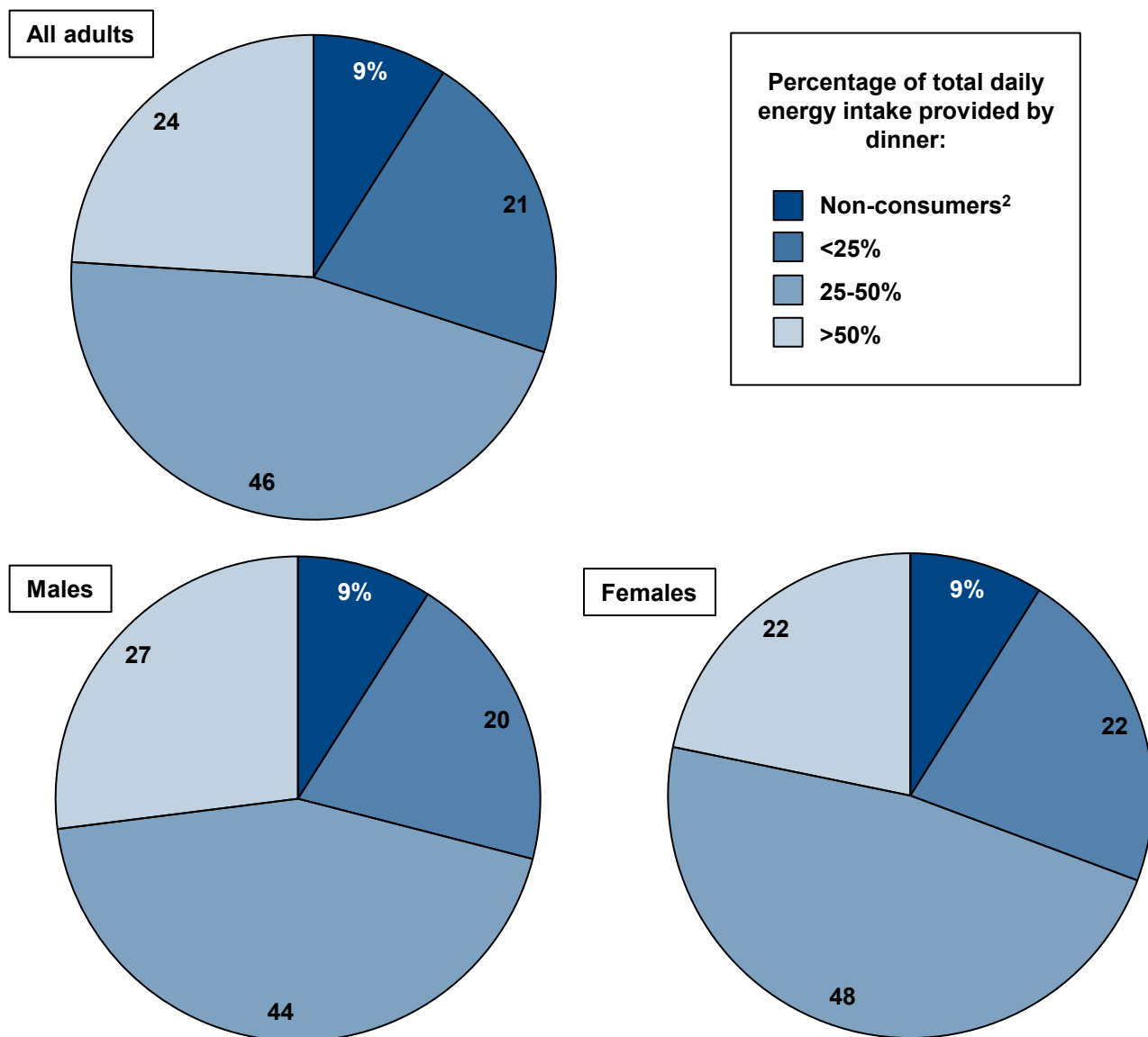
SOURCE: WWEIA, NHANES 2017 - March 2020, day 1, adults 20 years of age and older.

## What percentage of total daily energy is consumed at dinner?

Dinner consumption accounts for 36% of total daily energy intake by U.S. adults overall (*data not shown*).

About one in five adults consume some energy but less than 25% of their total daily energy intake from dinner (Figure 4). About half of adult dinner consumers (46%) obtain between 25 and 50 percent of their total energy intake from this meal. For about one quarter of adults, dinner accounts for more than half of the energy they consume on the intake day. Findings by gender are similar to those of adults overall.

**Figure 4. Percentage<sup>1</sup> of individuals by level of total daily energy intake from dinner, adults age 20+ years, by sex, 2017 – March 2020**



<sup>1</sup>Estimates may not sum to 100 due to rounding.

<sup>2</sup>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 dinner consumers and non-consumers?

Among all adults and males, energy intake does not differ between dinner consumers and non-consumers (Table 1). However, average daily intake of energy is about 200 kilocalories greater among females who consume dinner relative to their non-consumer counterparts. Intake of protein, dietary fiber, vitamins A and B12 and all minerals shown except calcium are higher among dinner consumers as compared to non-consumers for adults collectively. Except for dietary fiber, these same statistical differences by dinner consumption status are seen among males and/or females when analyzed separately.

**Table 1. Mean daily intake of energy and selected nutrients by dinner consumption<sup>1</sup> status among adults age 20+ years, by gender, 2017 – March 2020**

Energy/Nutrient	All adults		Males		Females	
	C	NC	C	NC	C	NC
Energy (kcal) <sup>2</sup>	2167	1899	2512	2177	1847*	1635
<b>Macronutrients/food components:</b>						
Protein (g)	82*	67	96	77	70*	57
Carbohydrate (g)	246	222	282	251	213	194
Added sugars (tsp eq)	17	16	19	17	14	14
Dietary fiber (g)	17*	15	18	16	15	13
Total fat (g)	89	77	102	87	77	69
Saturated fat (g)	29	25	33	27	25	23
Alcohol (g)	11	10	15	15	7	5
<b>Vitamins:</b>						
Vitamin A (mcg RAE)	642*	489	680*	454	607	522
Vitamin B12 (mcg)	5*	4	6*	4	4	3
Vitamin C (mg)	78	68	83	69	74	68
Vitamin D (mcg)	4	4	5	4	4	4
Folate (mcg DFE)	487	431	556	517	422	350
<b>Minerals:</b>						
Calcium (mg)	954	856	1070	913	846	802
Iron (mg)	14*	12	16	14	12*	10
Potassium (mg)	2635*	2181	2947*	2402	2345*	1971
Sodium (mg)	3517*	2886	4080	3381	2996*	2418

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.

<sup>1</sup>See definition of “consumer/non-consumer” on page 8.

<sup>2</sup>See definition of “kilocalorie” on page 8.

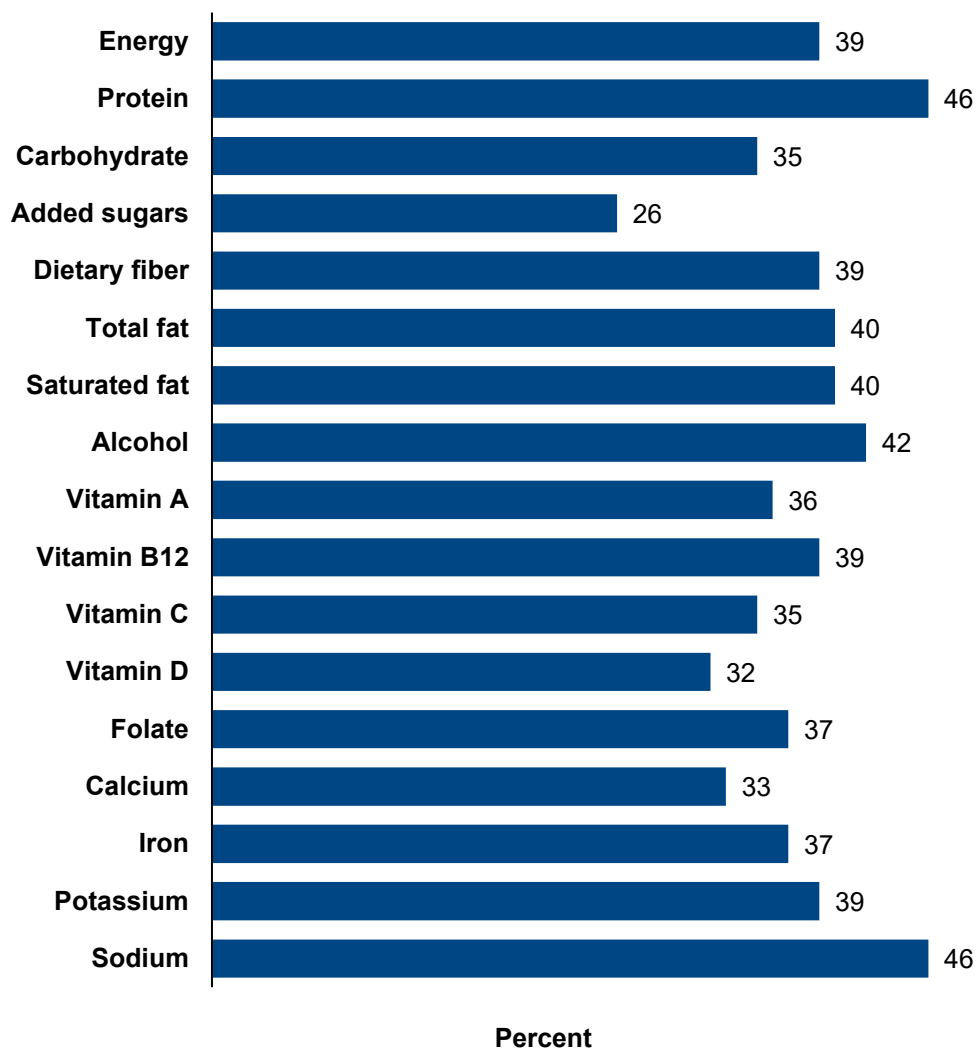
\*Intake is significantly higher for adult consumers than for non-consumers ( $p < 0.001$ ) based on a two-tailed t-test.

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

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

Adult dinner consumers obtain a considerable percentage (39%) of the day’s intake of energy and nutrients at dinner (Figure 5). For most nutrients/food components shown, the contribution of dinner is within  $\pm 5$  percentage points of its energy contribution. However, for a handful of others, the percentage contribution of dinner to intake falls outside this range, with protein and sodium exceeding it and added sugars, vitamin D and calcium falling below it.

**Figure 5. Contributions of dinner to total daily intakes of energy and selected nutrients/food components, adults age 20+ years, consumers<sup>1</sup> only, 2017 – March 2020**



<sup>1</sup>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 dinner?

Protein foods and vegetables are common choices by adults at dinner (Table 2). Mixed dishes, which often contain both, are reported by two-thirds of adult dinner consumers and contribute nearly 600 kilocalories on average to daily intake. Ingredients of mixed dishes such as meat and vegetables are rich sources of many of the nutrients that are higher among dinner consumers (*see page 4*) - protein, vitamin B12, iron (meat), and vitamin A and potassium (vegetables).

**Table 2. Foods frequently consumed at dinner: 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) <sup>1</sup>
<b>Mixed dishes</b>	<b>67</b>	<b>572</b>
Sandwiches, including burgers	20	542
Grain-based mixed dishes	14	464
Meat, poultry, seafood mixed dishes	11	428
Mexican mixed dishes	8	728
Pizza	7	729
Soups	6	301
<b>Vegetables</b>	<b>41</b>	<b>250</b>
Lettuce and lettuce salads	9	233
White potatoes, including French fries	16	281
<b>Protein foods</b>	<b>35</b>	<b>355</b>
Chicken	13	357
Meats	11	320
Beef, including ground beef	7	328
Seafood	6	333
<b>Snacks and sweets</b>	<b>22</b>	<b>283</b>
Sweet bakery products	8	335
Savory snacks	7	224
<b>Grains</b>	<b>21</b>	<b>259</b>
Bread, rolls, tortillas	10	225
Rice	7	228
<b>Fruit</b>	<b>7</b>	<b>109</b>
<b>Dairy, excluding milk beverages<sup>2</sup></b>	<b>3</b>	<b>163</b>

<sup>1</sup>Kcal, kilocalories. See Definitions on page 8.

<sup>2</sup>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 dinner?

As shown in Table 3, approximately two-thirds of adults who consume dinner have a non-alcoholic beverage at this meal. The most commonly consumed beverage is water followed by sweetened beverages.

Alcoholic beverages, which includes beer, wine, liquor, and cocktails, are reported by approximately one in eight adult dinner consumers. Fifteen percent of male consumers have a drink containing alcohol at this meal, whereas 10 percent of female consumers do so (*data not shown*).

Among all adult dinner consumers, non-alcoholic beverages account for an average of 7% of energy intake (58 kilocalories) obtained at dinner (*data not shown*).

**Table 3. Beverages frequently consumed at dinner: 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) <sup>1</sup>
<b>Beverages (nonalcoholic)<sup>2</sup></b>	<b>64</b>	<b>91</b>
Water	31	4
Sweetened beverages	17	185
Tea	9	98
Coffee	4	53
Milk, plain	4	186
100% juice	2	165
<b>Beverages (alcoholic)</b>	<b>13</b>	<b>329</b>

<sup>1</sup>Kcal, kilocalories. See Definitions on page 8.

<sup>2</sup>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.

**Dinner:** meal occasions designated by the respondent as “dinner”, “supper” or the Spanish equivalent “cena”. The time an eating occasion occurs has no implication as to the type of meal. An eating occasion reported during typical dinner hours (i.e., evening) is not considered to be dinner unless the respondent specified it as such.

**Consumer/non-consumer:** In general, anyone who reported any dinner (*see definition above*) was considered a “consumer,” whereas anyone who did not was considered a “non-consumer.” In all, 6,914 adults were classified as dinner consumers (3,336 males and 3578 females), and 793 were classified as non-consumers (409 males and 384 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 (9).

**WWEIA Food Categories:** Available at [www.ars.usda.gov/Services/docs.htm?docid=23429](http://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, a lettuce salad represented in the dietary data as iceberg lettuce, tomatoes, cucumbers, carrots, and ranch dressing would be assigned to the “lettuce and lettuce salads” group, along with similar salads that were not represented by multiple items, e.g., code 75142550: cucumber salad with Italian dressing. Similarly, if sugar and lemon were consumed with tea, those additions were assigned to the tea 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 (10). 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 341 were dinner consumers) were excluded. Likewise, in the income-specific analyses (also on page 2), individuals with missing family income information (971 adults, of whom 848 were dinner 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 (11). Intake of added sugars was calculated using the Food Patterns Equivalents Database for Use with WWEIA, NHANES 2017-March 2020 Prepandemic (12).



## References

1. Rebuli MA, Williams G, James-Martin G, Hendrie GA. Food group intake at self-reported eating occasions across the day: secondary analysis of the Australian National Nutrition Survey 2011-2012. *Public Health Nutr.* 2020;23(17):3067-3080. doi:10.1017/S1368980020001585
2. Moore LV, Hamner HC, Kim SA, Dalenius K. Common ways Americans are incorporating fruits and vegetables into their diet: intake patterns by meal, source and form, National Health and Nutrition Examination Survey 2007-2010. *Public Health Nutr.* 2016;19(14):2535-2539. doi:10.1017/S1368980016000586
3. Myhre JB, Løken EB, Wandel M, Andersen LF. Meal types as sources for intakes of fruits, vegetables, fish and whole grains among Norwegian adults. *Public Health Nutr.* 2015;18(11):2011-2021. doi:10.1017/S1368980014002481
4. U.S. Department of Agriculture, Agricultural Research Service. *Dinner: Percentages of selected nutrients contributed by foods and beverages consumed at dinner, by gender and age, What We Eat in America, NHANES 2017-March 2020 Prepandemic.* <https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/food-surveys-research-group/docs/wweia-data-tables/>. Accessed June 27, 2023.
5. Krok-Schoen JL, Jonnalagadda SS, Luo M, Kelly OJ, Taylor CA. Nutrient intakes from meals and snacks differ with age in middle-aged and older Americans. *Nutrients.* 2019;11(6):1301. Published 2019 Jun 8. doi:10.3390/nu11061301
6. Lee SH, Moore LV, Park S, Harris DM, Blanck HM. Adults meeting fruit and vegetable intake recommendations – United States, 2019. *MMWR Morb Mortal Wkly Rep.* 2022;71(1):1-9. Published 2022 Jan 7. doi:10.15585/mmwr.mm71010a1
7. U.S. Department of Health and Human Services and U.S. Department of Agriculture. *2020-2025 Dietary Guidelines for Americans.* 9<sup>th</sup> Edition. December 2020. <https://www.dietaryguidelines.gov> Accessed August 15, 2023.
8. Nishi SK, Jessri M, L'Abbé M. Assessing the dietary habits of Canadians by eating location and occasion: findings from the Canadian Community Health Survey, Cycle 2.2. *Nutrients.* 2018;10(6):682. Published 2018 May 27. doi:10.3390/nu10060682
9. 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.
10. 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.
11. USDA Food Surveys Research Group. *FNDDS Documentation and Databases.* [www.ars.usda.gov/fsrg/fndds/download](http://www.ars.usda.gov/fsrg/fndds/download). Accessed September 27, 2023.
12. USDA Food Surveys Research Group. *Food Patterns Equivalent Databases and SAS Datasets.* [www.ars.usda.gov/fsrg/fped/download](http://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. *Dinner Consumption by U.S. Adults: What We Eat in America, NHANES 2017-March 2020*. Food Surveys Research Group Dietary Data Brief No. 55. April 2024.

### Copyright information

All material appearing in this report is in the public domain and may be reproduced or copied without permission. However, citation as to source is appreciated.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

