The Contribution of Discrete Vegetables, Mixed Dishes, and Other Foods to Total Vegetable Consumption: US Ages 2 Years and Over, 2017–2018

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Abstract

Background—The 2020–2025 Dietary Guidelines for Americans recommend intake of a variety of vegetables, including dark green, red, and orange vegetables and starchy and other vegetables.

Objectives—This study aims to describe sociodemographic differences in the contribution of different categories of vegetables and the form in which they are consumed (ie, discrete vegetables, mixed dishes, and other foods such as savory snacks to total vegetable intake on a given day).

Design—This is a cross-sectional, secondary analysis of the 2017–2018 National Health and Nutrition Examination Survey.

Participants/setting—This study included the data of 7122 persons aged 2 years with reliable day 1 24-hour dietary recalls.

Main outcome measures—Serving equivalents of vegetables from 20 discrete categories of vegetables and from mixed dishes and other foods as a percentage of total vegetables.

Statistical analyses—Pairwise differences by age, sex, race, Hispanic origin, and family income were examined using univariate *t* statistics, and trends by age and income were examined using orthogonal polynomials.

Results—Mean serving equivalents of vegetables was 1.4 cups. The serving equivalents increased with age among youth, was higher among non-Hispanic Asian (NHA) persons than other subgroups, and increased with increasing family income. Overall, discrete vegetables contributed 55.2% of total vegetable intake, and the contribution increased with age in adults and with increasing family income. The top 5 discrete vegetable contributors were other vegetables and combinations, french fries and other fried white potatoes, lettuce and lettuce salads, mashed potatoes and white potato mixtures, and baked or boiled white potatoes. Nonstarchy discrete vegetables contributed more to total vegetables for adults (37.6%) than youth (28.0%), and the contribution increased with increasing family income. On the other hand, the contribution of mixed dishes and other foods decreased with increasing family income.

Conclusions—Discrete vegetables only contributed 55.2% of total vegetable intake, and the top sources were not varied. Three of them potato based, which may explain the reported low vegetable intake, relative to the 2020–2025 Dietary Guidelines for Americans. More than one-third of vegetables consumed were nonstarchy discrete vegetables, many of which are high in vitamins. Nonstarchy discrete vegetable intake was higher in adults than youth and increased with family income.

Keywords

Food category; Sources; Youth; Adults; NHANES

Dietary patterns associated with positive health outcomes include higher intake of fruits and vegetables because they are sources of many essential nutrients, fiber, and phytochemicals.[1–3] A diet rich in fruits and vegetables is associated a with decreased risk of all-cause mortality, cardiovascular disease, and cancer.[4–7] Increased fruit and nonstarchy vegetable intake, when replacing calorie-dense foods, has been associated with weight loss among adults.[8] The 2020–2025 Dietary Guidelines for Americans (DGAs)[3] recommends intake of a variety of vegetables including dark green, red, and orange vegetables; legumes; starchy vegetables; and other vegetable subgroups, in all options: fresh, frozen, canned and dried, cooked or raw. Starchy vegetables, primarily tubers, are inherently higher in calories than other vegetables and are often consumed in nonnutrient dense forms, such as fried, thus the DGAs recommend lower intake of starchy vegetables compared with nonstarchy vegetables combined.[3]

The US Department of Agriculture's MyPlate plan,[1] a food pattern consistent with the DGAs, states that one-half of the plate should be fruits and vegetables. Recommended average daily intake of vegetables for ages 2 years and over with low to moderate physical activity ranges from 1 to 4 cups of vegetables per day, depending on age and sex.[1,3] Despite existing recommendations and the fact that more than 90% of youth and adults report any intake of vegetables,[9–11] few youth and adults consume recommended amounts of vegetables, especially from dark green vegetables and legumes.[3,12–16] Varying the types of vegetables consumed is a way to meet daily intake recommendations,[17,18] and consuming

vegetables from a variety of food category sources is associated with higher intake of vegetables in youth and adults.[19]

Detailed, recent, nationally representative information on sources of vegetable intake in the United States is limited, and the latest similar analysis only included youth.[20] Also, the percent of youth and adults who report consuming the different types of vegetables on a given day vary by sociodemographic characteristics.[10,11] Therefore, based on the food categorization scheme used in the DGAs, the objective of this study was to describe, using the most recent national data available, the sociodemographic differences in the contribution of different types of vegetables and the form in which they are consumed (ie, discrete, mixed dishes and other foods such as savory snacks to total vegetable intake) in US children, adolescents, and adults in 2017–2018.

METHODS

Study Design

Data from participants aged 2 years and over in the 2017–2018 National Health and Nutrition Examination Survey (NHANES) were used for this analysis. NHANES is a survey of the US civilian, noninstitutionalized population administered by the National Center for Health Statistics (NCHS) based on a complex, stratified, multistage probability sample design. The survey combines an in-home interview and a standardized physical examination at a mobile examination center (MEC). Details of the NHANES study design, implementation, data sets, analytic considerations, and other documentation are available online.[21] The NHANES protocol was approved by the NCHS Research Ethics Review Board. For children and adolescents <18 years, written parental consent was obtained, and for children and adolescents 7 to 17 years, assent also was obtained. Written informed consent was obtained for adults. The sample design included oversampling to obtain reliable estimates of health and nutritional measures for certain population subgroups. For the survey period 2017–2018, non-Hispanic Black (NHB), NHA, Hispanic, and low-income persons were oversampled.[22] The examination response rate for NHANES participants in the 2017–2018 survey cycle was 48.8%.[23]

Dietary Intake

Two 24-hour dietary recall interviews were obtained from survey participants; the first recall was conducted in person at the MEC, and the second was conducted by telephone 10 days later.[21,24–26] This analysis used data from the first 24-hour dietary recall. Trained interviewers, using a computer-assisted dietary interview system that included an automated multiple-pass method with standardized probes,[27] collected type and quantity of all foods and beverages consumed during the previous 24 hours. Survey participants 12 years and older completed dietary interviews on their own, in most cases; children 6 to 11 years old were assisted by an adult; parents or guardians reported for children 5 years of age or younger. Recalls deemed reliable (99% of all dietary recalls performed) were used in the current analysis. A detailed description of dietary data quality control criteria and methods are described elsewhere.[26,28]

Total vegetable intake, including bean, peas, legumes, in cup equivalents, reported in the NHANES 24-hour recalls was obtained using US Department of Agriculture's 2017–2018 Food Patterns Equivalents Database.[29] The database provides disaggregated ingredients from foods and beverages using 11 distinct food groups and 26 subgroups consistent with the dietary patterns recommended in the DGAs.[29] Discrete vegetable food categories, vegetables in their whole form, were determined using the 2017–2018 US Department of Agriculture What We Eat in America (WWEIA) food classification scheme. This classification scheme characterizes food items as they are commonly consumed and includes 167 food categories (see the Figure, available at www.jandonline.org).[30] In this study, vegetable juice (categorized under beverages in WWEIA food categories), as well as beans, peas, and legumes (categorized under protein foods) and beans, peas, legume dishes (categorized under mixed dishes) were also classified as a discrete vegetable sources. The contribution of mixed dishes, which are multi-ingredient foods that may include vegetables, was also examined. These included the WWEIA categories of meat, poultry, seafood, sandwiches, pizza, Mexican mixed dishes, Asian mixed dishes, grain-based mixed dishes, soups, vegetable-based mixed dishes, and vegetables on a sandwich and vegetable dishes. In addition, the contribution of other foods was examined. These are the remaining food categories, where non-vegetables are the main food, such as milk and dairy, protein foods (excluding beans, peas, legumes), grains, snacks and sweets, fruit, beverages (excluding vegetable juice), fats and oils, condiments and sauces (including tomato-based condiments), sugars, and other. Infant formula and baby food were excluded in these analyses.

Demographic Variables

Vegetable intake was described by sex, age, race and Hispanic origin, and family income, based on self-reported information collected as part of the in-home interview. Age in years was categorized into 6 groups (2–5, 6–11, 12–19, 20–39, 40–59, and 60 and over), in addition to overall children and adolescents 2 to 19 years and adults 20 years and older. Race and Hispanic origin groups included non-Hispanic White (NHW), NHB, NHA, and Hispanic persons. Participants classified as "other race and Hispanic origin" included those reporting multiple races were included in the overall estimates but are not shown separately. Family income was defined based on the federal poverty level (FPL) (<130%, 130% to <350%, and 350%). These levels are based on income-to-poverty ratio, a measure of the annual total family income divided by the US Department of Health and Human Services poverty guidelines, after accounting for inflation and family size.[22] The recommended cutoff point for eligibility for the Supplemental Nutrition Assistance Program,[31] and the free and reduced-price school lunch program is 130% of the poverty threshold.[32]

Statistical Analysis

Total servings of vegetables in cup equivalents and percent contribution of discrete vegetables, mixed dishes, and other foods to total vegetable intake on a given day, estimated following the ratio of means approach described in the literature,[33] are presented. The contribution of the discrete vegetables, mixed dishes, and other foods to total vegetable intake was determined by summing the serving equivalents of vegetables provided by these food categories for all persons in the subgroup and dividing that by the total number of servings of vegetables for all persons in the subgroup.[33,34] The contributions of total starchy

and total nonstarchy discrete vegetables to total discrete vegetable and total vegetable intake were also calculated.

NHANES survey design variables and day 1 dietary sample weights were used to account for differential probabilities of selection, nonresponse, noncoverage, and day of the week to obtain estimates representative of the civilian, noninstitutionalized US population. Standard errors were estimated using Taylor series linearization,[35] a method that incorporates the NHANES sampling design. All reported estimates were evaluated using the NCHS data presentation standards (relative standard error <30%) for mean estimates.[35] Pairwise differences by age group, race and Hispanic origin, family income, and sex were evaluated using a 2-sided t statistic. Bonferroni's method of correction was used to adjust for multiple comparison tests.[36] Tests for linear and quadratic trends by age and family income were evaluated using orthogonal polynomials, and pairwise P differences were evaluated when there was a quadratic trend. All significance levels for statistical testing were at the $P <$ .05 significance level. Except for age-specific comparisons, estimates were age adjusted for comparisons by sex; estimates were age and sex adjusted for comparisons by race and Hispanic origin and family income. Age-adjusted estimates were obtained using the direct method to the 2000 projected US Census population and age groups 2 to 5, 6 to 11, 12 to 19, 20 to 39, 40 to 59, and 60 years and over.[37] Statistical analyses were performed using SAS (version 9.4, SAS Institute Inc)[38] and SUDAAN version 11.0 (RTI International).[39]

Of the 8663 participants aged 2 years and over surveyed in 2017–2018, 510 did not go to the MEC, 939 of the MEC sample did not provide a recall, 84 supplied a recall deemed unreliable, 8 reported consuming breast milk, and 787 with reliable recalls were missing information on family income (these participants were included in analyses that did not involve family income). The final analytic sample, for analyses not related to family income, was 7122.

RESULTS

Adjusted for age, the US population aged 2 years and over consumed 1.4±0.04 cup equivalents of vegetables on a given day in 2017–2018 (Table 1, available at www.jandonline.org). Of this total vegetable intake, 55.2% was contributed by discrete vegetables (WWEIA vegetable food categories, vegetable juice, and beans, peas, legumes), 29.5% by mixed dishes, and 15.7% by other foods. The "other foods" included tomato-based condiments and sauces. Servings of vegetables increased with age in youth, from 0.7 cup equivalents among subjects aged 2 to 5 years to 1.0 cup equivalents among subjects aged 12 to 19 years. Servings of vegetables was higher among NHA persons (1.6 cup equivalents) than all other subgroups and increased with increasing family income from 1.2 cup equivalents to 1.5 cup equivalents. Discrete vegetables contributed 50.7% of total vegetables in youth aged 2 to 19 years and 56.8% in adults aged 20 years and over, and increased with age in adults. Mixed dishes contributed less to total vegetable intake for NHB persons (23.9%) than Hispanic persons (36.0%). The contribution of discrete vegetables to total vegetable intake increased with increasing family income, from 50.4% for family incomes less than 130% FPL to 59.6% for family incomes at or above 350% of the FPL.

Overall, the top 5 discrete vegetable contributors were other vegetables and combinations, such as avocado and cauliflower (9.6%); french fries and other fried white potatoes (8.1%); lettuce and lettuce salads (5.6%); mashed potatoes and white potato mixtures (5.8%); and white potatoes, baked or boiled (4.9%) (Table 2). Similar findings were seen for both male and female youths and adults. French fries and other fried white potatoes represent 39.9% of total starchy discrete vegetables overall and more than 50% of total starchy discrete vegetables among youth.

The top 5 discrete vegetable contributors varied by age and differed between youth and adults (Table 2). In young children 2 to 5 years, carrots and broccoli were among the top 5 contributors and broccoli for male youth. In adults, tomatoes were among the top 5 contributors in ages 60 years and older, and the contribution increased with age. The contribution of total nonstarchy discrete vegetables was lower for ages 20 to 39 years than for ages 40 to 59 years and ages 60+ years, and the contribution of total starchy discrete vegetables was lower for ages 40 to 59 years than for ages 60+ years. No significant trends existed for the contribution of mixed dishes to total vegetable intake, but the contribution of other foods to total vegetable intake decreased with age in adults.

Differences also existed by race and Hispanic origin, after adjustment for age and sex (Table 3). Overall, the contribution of other vegetables and combinations was lower for NHB persons than NHA persons. The contribution of french fries and other fried white potatoes was lower in NHA persons than NHB persons. Total starchy discrete vegetables contributed less to total vegetable intake for NHA persons (12.5%) than for NHW (22.2%) and NHB (24.2%) persons. Mixed dishes contributed less to total vegetable intake of NHB persons compared with Hispanic persons overall and less for NHW and NHB youth compared with Hispanic youth; no significant differences existed between NHA and Hispanic persons.

Adjusted for age and sex, differences were also seen by family income (Table 4). Overall, tomatoes were also among the top 5 contributors for those with family incomes 350% of the FPL. The contribution of lettuce and lettuce salads increased with increasing family income. Conversely, the contribution of french fries and other fried white potatoes decreased with increasing family income. The contribution of total nonstarchy discrete vegetables to total vegetable intake increased with increasing family income, from 28.0% for family incomes <130% FPL to 40.8% for family incomes 350% of the FPL. The contributions of mixed dishes and other foods, overall, also decreased from 31.6% to 27.0%, and from 18.4% to 14.3% for family incomes <130% FPL and 350% FPL, respectively.

DISCUSSION

The 20 discrete vegetables accounted for 55.2% of total vegetable intake in US persons aged 2 years and over in 2017–2018. Overall, approximately one-third of vegetables consumed were nonstarchy discrete vegetables; about half of these vegetables were red, orange, and dark green vegetables–carrots, tomatoes, other red and orange vegetables, broccoli, lettuce and lettuce salads, spinach, and other dark green vegetables. Another one-fifth of vegetables were starchy discrete vegetables, primarily french fries and fried white potatoes.

Different patterns in intake were found by sex, age, race and Hispanic origin, and income. Adults obtained more vegetables from nonstarchy discrete vegetables than youth, primarily from tomatoes and other red and orange vegetables, lettuce, and lettuce salads. Starchy discrete vegetables contributed less to total vegetable intake for NHA persons than for NHW and NHB persons, and as income increased nonstarchy discrete vegetables contributed more to total vegetable intake.

This analysis adds to limited information available about sources of vegetables consumed by youth and adults in a nationally representative sample.[6,19,20] As already mentioned, overall, even though nonstarchy discrete vegetables included 15 of the 20 discrete vegetables, they only contributed about 35% of total vegetable intake. Starchy discrete vegetables were primarily french fries and other fried white potatoes (approximately 40% of all starchy discrete vegetables). In addition, of the top 5 discrete vegetable sources, 3 were potato based. Combined, the 5 top sources contributed about 62% of all discrete vegetables. This limited variety in discrete vegetable sources may contribute to the reported inadequate intake of vegetables in the US diet.[3] These findings support those of Conrad et al,[6] who, using the Healthy Food Diversity index scores, found that US adults do not consume a wide variety of vegetables. Hoy et al,[19] using a different approach and reporting percentages based on the number of different types of nonmixed dishes contributing more than 0.1 cup equivalents of fruits and vegetables and mixed dishes contributing more than 0.2 cup equivalents, found a higher number of unique foods contributing to vegetable intake to be associated with higher amounts consumed, and those consuming more vegetables consumed more servings of discrete vegetables, excluding potatoes.[19] The health-promoting bioactive components of vegetables are not evenly distributed across different types[6,19]; thus, the DGAs recommend intake of vegetables from a variety of subgroups.[3]

The DGAs also recognize the important role played by mixed dishes in US dietary patterns and recommend increasing the vegetable content of these mixed dishes.[3] Similar to findings by Branum and Rossen[20] and Hoy et al,[19] mixed dishes played a key role in vegetable intake in this study. About 30% of vegetables were consumed as part of mixed dishes. This may impact overall intake since visualizing the amount consumed is more difficult, and the vegetable content of some mixed dishes may be low and may also impact variety. Mixed dishes are also more likely to include nonnutrient dense components, including saturated fats and added sugars,[3] than uncooked discrete vegetables.

Predictors of vegetable intake may include favorable taste preferences, perceived time barriers, home availability, social support, and knowledge of reccommendations.[40–42] Differences in diet quality have been reported; for instance women and those with higher levels of education and income have better nutrition knowledge,[43–45] which may explain the higher contribution of nonstarchy vegetables to total vegetable intake in these populations. Variations observed by race and Hispanic origin may be related to cultural food patterns, which shape food preferance.[3,46] In this study, Hispanic youth obtained a greater percentage of vegetable intake from mixed dishes than NHW and NHB persons. Traditional Hispanic cuisines, though diverse, generally consist of multi-ingredient dishes.[47]

This study has some limitations. These include the fact that the analyses are based on self-reported dietary data, which may be subject to misreporting, as previously described,[48–50] including the reliance on accurate memory, with potential for bias stemming from underreporting or overreporting of certain foods. This study also reports intake on a given day, which does not represent usual vegetable intake. Also, the differences in food categorization approaches limit comparisons between studies since results are driven by the underlying food categories. For instance, since beans, peas, and legumes are included in total vegetables and as a discrete vegetable category in this study, this changes the contribution of the different food categories category to total vegetable intake. The NHANES surveys have also observed continuous decreases in its overall response rate, which may increase the potential for nonresponse bias.[51] Nevertheless, bias is minimized by the weighting adjustments used in this study. Also, of the participants 2 years and older surveyed in 2017–2018, almost 18% were excluded in this study due to lack of dietary data (16.7%), breastfeeding (0.09%), or dietary data deemed unreliable (0.97%), although the dietary weights used in these analyses account for nonresponse bias due to both not participating in the dietary recall component and not having a valid recall. Also, several estimates did not meet NCHS reliability criteria.

Strengths of the study include that the estimates are nationally representative. Also, 24-hour dietary recall data in NHANES were collected evenly across days of the week and seasons of the year, to account for day-to-day variation and random errors, hence they are representative of mean population intake.[21] Finally, WWEIA food categories, like the food categories used in the DGAs,[3] were used in these analyses, along with reported ratios of means, which provide information on intake of a population as a whole and is a more appropriate analytical technique for a population-level research like this than mean ratios, which are less generalizable, where ratios of intake are first calculated at the individual level and then averaged.[34]

CONCLUSIONS

Overall, vegetables consumed in their whole form only contributed slightly more than 50% of total vegetable intake, and the top sources were not varied, which may explain the reported low intakes, relative to the DGAs. Approximately 35% of these vegetables were nonstarchy vegetables, about 50% of these were red, orange, and dark green vegetables, and another 20% of these vegetables were starchy discrete vegetables, mostly french fries and other fried white potatoes. Nonstarchy discrete vegetable intake was higher in adults than youth and increased with increasing family income.

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RESEARCH SNAPSHOT

Research Question:

What is the contribution of discrete vegetable, mixed dishes, and other foods to total vegetable intake on a given day of US population aged 2 years and over, and are there differences in intake by sociodemographic characteristics?

Key Findings:

The results showed that discrete vegetables contributed 55.2% of total vegetable intake on a given day, and the contribution increased with age in adults and with increasing family income. Thirty-five percent of these vegetables were nonstarchy discrete vegetables, and another 20% were starchy discrete vegetables, mostly french fries and other fried white potatoes. The contribution of nonstarchy discrete vegetables was higher for adults than youth and increased with increasing family income, and the contribution of mixed dishes and other foods decreased with increasing family incomes.

Forms of food categories	WWEIA food categories
Discrete vegetables	Broccoli; carrots; cabbage, coleslaw, nonlettuce salads; corn; fried vegetables; french fries and other fried white potatoes; lettuce and lettuce salads; mashed potatoes and white potato mixtures; other vegetables and combinations; onions; other red and orange vegetables; other starchy vegetables, spinach and other dark green vegetables; string beans; tomatoes; white potatoes, baked or boiled; vegetable juice; beans, peas, legumes and beans, peas, legume dishes
Mixed dishes	Burritos and tacos; egg rolls, dumplings, sushi; fried rice and lo/chow mein; macaroni and cheese; meat mixed dishes; nachos; other Mexican mixed dishes; pasta mixed dishes, excludes macaroni and cheese; pizza; poultry mixed dishes; rice mixed dishes; seafood mixed dishes; soups; stir-fry and soy-based sauce mixtures; vegetable dishes; burgers; cheese sandwiches; chicken/turkey sandwiches; egg/breakfast sandwiches; frankfurter sandwiches; other sandwiches; peanut butter and jelly sandwiches; seafood sandwiches; vegetables on a sandwich
Other foods	Milk, whole; milk, reduced fat; milk, low fat; milk, nonfat; milkshakes and other dairy drinks; milk substitutes; flavored milk, reduced fat; flavored milk, whole; flavored milk, low fat; flavored milk, nonfat; cheese; cottage and ricotta cheese; regular yogurt; Greek yogurt; cold cuts and cured meats; bacon; frankfurters; sausages; beef, excludes ground; ground beef; pork; lamb, goat, game; liver and organ meats; chicken, whole pieces; chicken patties, nuggets and tenders; turkey, duck, other poultry; fish; shellfish; eggs and omelets; beans, peas, legumes; rice; pasta, noodles, cooked grains; yeast breads; rolls and buns; bagels and English muffins; tortillas; biscuits, muffins, quick breads; pancakes, waffles, french toast; doughnuts, sweet rolls, pastries; cookies and brownies; cakes and pies; cereal bars; nutrition bars; candy containing chocolate; candy not containing chocolate; potato chips; tortilla, corn, other chips; popcorn; pretzels/snack mix; crackers, excludes saltines; saltine crackers; ice cream and frozen dairy desserts; gelatins, ices, sorbets; pudding; ready-to-eat cereals higher sugar (>21.2 g/100 g); ready-to-eat cereals, lower sugar ($\leq$21.2 g/100 g); oatmeal; grits and other cooked cereals; apples; bananas; grapes; peaches and nectarines; citrus fruits; melons; dried fruits; strawberries; blueberries and other berries; other fruit and fruit salads; pears; pineapples; mango and papaya; citrus juice; apple juice; other fruit juice; soft drinks; fruit drinks; sport and energy drinks; nutritional beverages; smoothies and grain drinks; diet soft drinks; diet sport and energy drinks; other diet drinks; coffee; tea; beer; wine; liquor; tap water; bottled water; flavored or carbonated water; enhanced or fortified water; mustard and other condiments; olives, pickles, and pickled vegetables; pasta sauces, tomato-based; soy-based condiments; tomato-based condiments; dips, gravies, and other sauces; sugar substitutes; sugars and honey; jams, syrups, toppings; salad dressings and vegetable oils; mayonnaise; margarine; cream and cream substitutes; cream cheese, sour cream, whipped cream; butter and animal fats; not in a food category; protein and nutritional powders

Figure.
Breakdown of the 2017–2018 What We Eat in America (WWEIA) food categories and forms of food categories

Table 1.

Age-adjusted percentage of total vegetable intake on a given day from discrete vegetables, mixed dishes, other foods, overall and by sociodemographic characteristics, US population aged 2 years and over, National Health and Nutrition Examination Survey, 2017–2018

Sociodemographic characteristics	Sample size[b]	Total vegetables (cup equivalents)		Vegetable Source (Percent of Total Cup Equivalents of Vegetables)[a]					
				Discrete vegetables		Mixed dishes		Other foods	
		Mean	SE[c]	%	SE	%	SE	%	SE
Overall[d]	7122	1.4	0.04	55.2	1.4	29.5	1.1	15.7	0.6
Age (y)									
2–19[d]	2380	0.8[e]	0.02	50.7	1.6	30.9	1.1	18.5	1.1
2–5	540	0.7[f]	0.03	53.7	3.2	28.2	2.9	17.5	2.0
6–11	795	0.8	0.05	50.0	2.3	32.0	1.9	17.9	1.5
12–19	1045	1.0	0.04	49.2	1.5	31.8	1.9	19.5	1.7
20 and over[d]	4742	1.6	0.05	56.8	1.6	29.0	1.3	14.7	0.6
20–39	1430	1.6	0.05	53.2[f]	1.7	29.8	1.7	17.6[f]	1.0
40–59	1501	1.6	0.07	56.9	2.7	29.7	2.6	13.8	1.1
60+	1811	1.5	0.08	61.1	1.8	27.4	1.7	12.1	1.0
Sex[d]									
Male	3481	1.4	0.04	51.3	1.7	31.6	1.3	17.8	0.8
Female	3641	1.4	0.04	58.2	1.5	27.9	1.4	14.0	0.6
Race and Hispanic origin[d,g]									
Non-Hispanic White	2491	1.4[h]	0.05	58.5	2.1	26.4	1.6	15.9	0.9
Non-Hispanic Black	1659	1.2[h,i]	0.03	57.9	1.4	23.9[i]	0.9	18.0	0.9
Non-Hispanic Asian	862	1.6[i]	0.05	50.0	2.0	37.0	2.3	11.3	1.1
Hispanic	1634	1.4	0.05	49.2	1.7	36.0	1.0	15.3	1.0
Federal Poverty Level[d,j]									
<130%	2039	1.2[k]	0.05	50.4[k]	1.9	31.6[k]	1.6	18.4[k]	1.0
130% to <350%	2557	1.3	0.03	53.8	2.0	29.6	1.3	17.0	1.3

Sociodemographic characteristics	Sample size [b]	Total vegetables (cup equivalents)		Vegetable Source (Percent of Total Cup Equivalents of Vegetables) [a]					
				Discrete vegetables		Mixed dishes		Other foods	
		Mean	SE [c]	%	SE	%	SE	%	SE
350%	1739	1.5	0.07	59.6	1.6	27.0	1.5	14.3	1.0

[a] Percentages are based on What We Eat in America Food Categories, 2017–2018. They may not add up to 100% due to rounding. Pairwise tests were performed using *t* statistic. *P* values were adjusted using Bonferroni's method of correction for multiple comparison tests. Tests for trends were evaluated using orthogonal polynomials. Significance levels for statistical testing were at the *P* < .05 significance level.

[b] Unweighted sample size includes responses from all reliable and complete recalls.

[c] SE = standard error.

[d] Percentages are age adjusted by the direct method to the 2000 projected US Census population using age groups 2 to 5, 6 to 11, 12 to 19, 20 to 39, 40 to 59, and 60 and over.

[e] Significantly different from 20 years and over group.

[f] Linear age trend for youth 2 to 19 years or adults 20 years and over.

[g] Other race category not shown (n = 476).

[h] Significantly different from non-Hispanic Asian.

[i] Significantly different from Hispanic.

[j] Participants with missing federal poverty level information (n = 787) were included in analyses that did not involve family income.

[k] Linear federal poverty level trend.

Table 2.

Percent contribution of discrete vegetables, mixed dishes, and other foods to total vegetables intake on a given day, US population 2 years and over, by sex and age, 2017–2018[a]

WWEIA[b] food categories	All Overall[c]	All Male[d]	All Female[d]	2–19 y Overall[c]	2–19 y Male[d]	2–19 y Female[d]	20 y Overall[c]	20 y Male[d]	20 y Female[d]	2–19 y 2–5	2–19 y 6–11	2–19 y 12–19	20 y 20–39	20 y 40–59	20 y 60 +
	% of total cup equivalents of vegetables (SE[e])														
Nonstarchy discrete vegetables															
Carrots	2.5 (0.3)	2.5 (0.4)	2.7 (0.3)	3.2 (0.4)	2.4 (0.5)	3.8 (0.4)	2.3 (0.3)	2.5 (0.5)	2.3 (0.3)	4.9 (1.4)	3.1 (0.8)	2.2 (0.6)	2.1 (0.3)	2.9 (0.7)	2.3 (0.4)
Tomatoes	3.7 (0.4)	3.2 (0.5)	3.8 (0.3)	2.6 (0.6)	1.9 (0.6)	3.1 (0.5)	4.1 (0.4)	3.7 (0.6)	4.1 (0.3)	2.5[f] (1.0)	2.8[f] (1.0)	2.2 (0.3)	3.1[g] (0.4)	3.7 (0.5)	5.6 (0.9)
Other red and orange	1.2 (0.2)	0.7 (0.1)	1.8 (0.3)	0.6 (0.1)	0.3[f] (0.1)	0.8 (0.2)	1.5 (0.2)	0.8 (0.2)	2.1 (0.4)	1.2[f] (0.5)	0.6[f] (0.3)	0.2[f] (0.1)	1.9 (0.5)	1.0 (0.3)	1.7 (0.4)
Broccoli	3.0 (0.5)	1.9 (0.3)	3.6 (0.8)	3.8 (0.8)	2.9 (0.7)	3.8 (1.0)	2.7 (0.6)	1.5 (0.2)	3.5 (1.0)	5.5[f] (1.7)	2.6 (0.6)	2.9 (0.9)	2.3 (0.5)	3.2[f] (1.5)	1.7 (0.3)
Lettuce and lettuce salads	5.6 (0.5)	5.3 (0.7)	6.3 (0.4)	3.5[h] (0.5)	2.6 (0.5)	4.8 (0.9)	6.3 (0.5)	6.3 (0.9)	6.8 (0.4)	1.6[g] (0.5)	2.9 (0.4)	5.4 (1.3)	4.7[gi] (0.8)	8.4 (0.9)	6.9 (0.7)
Spinach	1.5 (0.3)	1.3[f] (0.4)	1.8 (0.4)	0.8 (0.4)	0.8[f] (0.5)	0.8 (0.1)	1.7 (0.4)	1.5[f] (0.5)	2.2 (0.6)	0.2[f] (0.1)	1.2[f] (0.8)	0.7[f] (0.3)	1.9[f] (0.9)	2.2 (0.5)	1.3 (0.3)
Other dark green	0.8 (0.2)	0.6 (0.2)	1.0 (0.3)	0.6[f] (0.2)	0.7[f] (0.3)	0.6[f] (0.3)	0.9 (0.2)	0.6[f] (0.2)	1.2 (0.3)	0.1[fg] (0.1)	1.2[f] (0.7)	0.6[f] (0.2)	0.9[f] (0.3)	1.0[f] (0.3)	0.8[f] (0.3)
Cabbage	0.7 (0.1)	0.6 (0.1)	0.8 (0.2)	0.2 (0.1)	0.3[f] (0.1)	0.3[f] (0.1)	0.9 (0.1)	0.7 (0.2)	1.0 (0.2)	0.1[f] (0.1)	0.4 (0.2)	0.2[f] (0.1)	1.0 (0.3)	0.7 (0.2)	0.9 (0.2)
Coleslaw, nonlettuce salads	1.1 (0.2)	1.0 (0.3)	1.2 (0.3)	0.4[f] (0.1)	0.2[f] (0.1)	0.7[f] (0.3)	1.3 (0.3)	1.4[f] (0.4)	1.5 (0.4)	0.1[f] (0.1)	0.4[f] (0.2)	0.6[f] (0.3)	0.7[g] (0.2)	1.9[f] (0.8)	1.8 (0.3)
Corn	1.7 (0.2)	1.6 (0.3)	1.8 (0.3)	2.3 (0.3)	2.3 (0.4)	2.9 (0.7)	1.4 (0.2)	1.4 (0.3)	1.5 (0.2)	2.5 (0.7)	3.1 (0.7)	2.3 (0.4)	0.9[g] (0.2)	1.7 (0.5)	1.8 (0.3)
Fried vegetables	0.3 (0.1)	0.4[f] (0.1)	0.3 (0.1)	0.4[f] (0.2)	0.7[f] (0.5)	0.2[f] (0.1)	0.3 (0.1)	0.3[f] (0.1)	0.4 (0.1)	1.1[f] (1.0)	0.2[f] (0.2)	0.3[f] (0.2)	0.3[f] (0.1)	0.4[f] (0.1)	0.2[f] (0.1)

WWEIA[b] food categories	All			2–19 y			20 y			2–19 y			20 y		
	Overall[c]	Male[d]	Female[d]	Overall[c]	Male[d]	Female[d]	Overall[c]	Male[d]	Female[d]	2–5	6–11	12–19	20–39	40–59	60 +
Onions	0.7 (0.1)	0.7 (0.1)	0.7 (0.1)	0.2[h] (0.0)	0.1[f] (0.0)	0.3 (0.1)	0.9 (0.1)	0.9 (0.1)	0.9 (0.1)	0.1[fg] (0.1)	0.1 (0.0)	0.4 (0.1)	0.7 (0.1)	0.9 (0.2)	1.1 (0.1)
Other vegetables and combinations (eg, avocado)	9.6 (0.6)	8.0 (1.0)	10.7 (0.7)	7.2 (0.8)	5.6 (0.9)	7.1 (0.9)	10.5 (0.8)	8.9 (1.3)	12.0 (0.9)	8.6[g] (1.6)	6.9 (1.2)	4.8 (0.5)	10.8 (0.9)	10.3 (1.3)	10.2 (0.8)
String beans	1.9 (0.2)	1.6 (0.3)	1.9 (0.2)	1.5 (0.4)	1.5[f] (0.5)	1.4 (0.4)	2.1 (0.4)	1.7 (0.4)	2.1 (0.4)	1.6[f] (0.4)	1.4 (0.5)	1.4 (0.4)	1.3 (0.3)	2.0 (0.6)	2.7 (0.7)
Vegetable juice	0.7 (0.1)	0.9[f] (0.3)	0.3[f] (0.1)	0.5[f] (0.3)	0.9[f] (0.7)	0.1[f] (0.1)	0.7 (0.2)	0.9[f] (0.4)	0.4[f] (0.1)	0.0 (0.0)	0.6[f] (0.5)	0.7[f] (0.6)	0.7[f] (0.3)	0.5[f] (0.2)	0.9 (0.3)
Total nonstarchy discrete vegetables	35.0 (1.7)	30.5 (2.4)	38.9 (1.6)	28.0[h] (1.8)	23.3 (1.6)	30.8 (2.4)	37.6 (1.8)	33.2 (2.9)	41.9 (1.7)	30.1 (2.7)	27.6 (1.9)	25.1 (2.2)	33.2[ij] (1.6)	40.8 (3.0)	40.0 (1.8)
Starchy discrete vegetables															
French fries and fried white potatoes	8.1 (0.3)	8.9 (0.6)	7.4 (0.3)	11.7[h] (0.4)	12.4 (1.0)	11.7[h] (1.0)	6.8 (0.4)	7.7 (0.7)	5.8 (0.5)	14.2 (2.0)	11.9 (1.7)	11.2 (0.9)	9.1[g] (0.9)	5.2 (0.6)	5.1 (0.9)
Mashed potatoes and white potato mixtures	5.8 (0.5)	5.7 (0.5)	5.8 (0.6)	5.4 (0.9)	5.2 (1.1)	5.8 (1.1)	6.0 (0.5)	5.9 (0.7)	5.8 (0.7)	4.6 (1.3)	4.7[f] (1.5)	6.6 (1.6)	4.6[g] (0.6)	5.8 (0.9)	8.1 (1.0)
White potatoes baked or boiled	4.9 (0.5)	4.8 (0.8)	4.7 (1.0)	4.6 (0.7)	4.6 (1.1)	4.8 (1.2)	4.9 (0.6)	4.8 (1.0)	4.6 (1.1)	3.3 (0.8)	4.7 (1.6)	5.3[f] (1.8)	4.7 (0.7)	3.9 (0.9)	6.1 (1.2)
Other starchy	1.1 (0.2)	1.0 (0.3)	1.0 (0.2)	0.7 (0.1)	0.8 (0.2)	0.7 (0.2)	1.2 (0.2)	1.1[f] (0.4)	1.1 (0.3)	1.1[f] (0.4)	0.5[f] (0.2)	0.7[f] (0.3)	1.2[f] (0.5)	0.7 (0.2)	1.6 (0.5)
Bean, peas, legumes	0.4 (0.0)	0.4 (0.1)	0.4 (0.1)	0.4 (0.1)	0.4 (0.1)	0.4 (0.2)	0.4 (0.1)	0.4 (0.1)	0.4 (0.1)	0.5[g] (0.2)	0.6 (0.3)	0.3 (0.1)	0.5 (0.1)	0.4 (0.1)	0.3 (0.1)
Total starchy discrete vegetables	20.3 (0.7)	20.8 (1.2)	19.3 (1.2)	22.8 (1.2)	23.3 (1.7)	23.5 (1.9)	19.3 (0.8)	19.8 (1.5)	17.8 (1.3)	23.7 (2.8)	22.4 (2.4)	24.1 (2.0)	20.0 (1.2)	16.0[i] (1.5)	21.2 (1.4)
Mixed dishes	29.5 (1.1)	31.6 (1.3)	27.9 (1.4)	30.9 (1.1)	32.4 (1.5)	29.8 (2.0)	29.0 (1.3)	31.3 (1.5)	27.2 (1.6)	28.2 (2.9)	32.0 (1.9)	31.8 (1.9)	29.8 (1.7)	29.7 (2.6)	27.4 (1.7)
Other foods	15.7 (0.6)	17.8 (0.8)	14.0 (0.6)	18.5 (1.1)	21.6 (1.9)	15.5 (1.4)	14.7 (0.6)	16.5 (1.0)	13.4 (0.7)	17.5 (2.0)	17.9 (1.5)	19.5 (1.7)	17.6[g] (1.0)	13.8 (1.1)	12.1 (1.0)

[a]Data from the National Health and Nutrition Examination Survey, 2017–2018. Percentages are based on WWEIA food categories, 2017–2018. Percentages may not add up to 100% due to rounding. Top 5 sources are shaded. All pairwise test performed using t statistic. P values adjusted using Bonferroni's method of correction for multiple comparison tests. Tests for trends by age evaluated using orthogonal polynomials. Significance levels for statistical testing were at the $P < .05$ significance level.

[b]WWEIA = What We Eat in America.

[c]Percentages they are age and sex adjusted by the direct method to the 2000 projected US Census population using ages 2 to 5, 6 to 11, 12 to 19, 20 to 39, 40 to 59, and 60 and over years.

[d]Percentages they are age-adjusted by the direct method to the 2000 projected US Census population using ages 2 to 5, 6 to 11, 12 to 19, 20 to 39, 40 to 59, and 60 and over years.

[e]SE = standard error.

[f]Estimate does not meet National Center for Health Statistics standard for reliability.

[g]Linear age trend.

[h]Significantly different from adults overall or adults of the same sex.

[i]Significantly different from 40 to 59 years.

[j]Significantly different from 60 and over years.

Table 3.

Age- and sex-adjusted percent contribution of discrete vegetables, mixed dishes, and other foods to total vegetables intake on a given day, US population 2 years and over, by race and Hispanic origin, 2017–2018[a]

WWEIA[b] food categories	All[c]				2–19 y[c]				20 y[c]			
	NHW[d]	NHB[e]	NHA[f]	Hispanic	NHW	NHB	NHA	Hispanic	NHW	NHB	NHA	Hispanic
	% of total cup equivalents of vegetables (SE[g])											
Nonstarchy discrete vegetables												
Carrots	3.1 (0.4)	1.6 (0.3)	1.2 (0.2)	1.9 (0.2)	4.1 (0.7)	1.3[h] (0.6)	1.2 (0.2)	2.5 (0.7)	2.7 (0.4)	1.7 (0.4)	1.2 (0.3)	1.6 (0.3)
Tomatoes	3.9 (0.6)	3.3 (0.4)	2.6 (0.6)	3.6 (0.4)	3.1[h] (1.1)	2.2[h] (0.9)	1.8[h] (0.9)	1.4 (0.3)	4.1 (0.6)	3.7 (0.4)	2.9 (0.6)	4.4 (0.4)
Other red and orange	1.0 (0.2)	1.8 (0.3)	1.2 (0.3)	1.4[h] (0.5)	0.3[h] (0.1)	1.6[h] (0.6)	0.5[h] (0.5)	0.2[h] (0.2)	1.2 (0.3)	1.9 (0.4)	1.4[h] (0.5)	1.9[h] (0.7)
Broccoli	3.5 (0.7)	2.1 (0.4)	2.5 (0.7)	2.3 (0.3)	4.8[h] (1.3)	1.1[h] (0.6)	3.0[h] (1.1)	2.9[h] (1.2)	3.0 (0.9)	2.5 (0.6)	2.3 (0.7)	2.1 (0.4)
Lettuce and lettuce salads	6.0 (0.7)	5.3 (0.7)	3.8 (0.7)	5.1 (0.6)	4.0 (0.9)	2.9[h] (1.3)	3.8[h] (1.5)	3.4 (0.6)	6.8 (0.8)	6.2 (0.6)	3.8 (0.6)	5.7 (0.8)
Spinach	1.6 (0.5)	1.9 (0.4)	1.9 (0.6)	0.8[h] (0.3)	1.0 (0.7)	1.0[h] (0.5)	0.9 (0.5)	0.3[h] (0.2)	1.8[h] (0.6)	2.2 (0.6)	2.3 (0.7)	1.0[h] (0.4)
Other dark green	0.6[h] (0.2)	2.6[i] (0.4)	1.1[h] (0.6)	0.3 (0.1)	0.1[h] (0.1)	2.9[h] (0.9)	0.2[h] (0.1)	0.4[h] (0.3)	0.8[h] (0.3)	2.6[i] (0.4)	1.4[h] (0.8)	0.2[h] (0.1)
Cabbage	0.4 (0.1)	1.5 (0.3)	2.4 (0.5)	1.1[h] (0.4)	0.1[h] (0.0)	0.4 (0.2)	0.4[h] (0.2)	0.4 (0.3)	0.5[h] (0.2)	1.8 (0.5)	3.1 (0.7)	1.4[h] (0.5)
Coleslaw, nonlettuce salads	1.2 (0.3)	1.2[h] (0.4)	0.7[h] (0.3)	0.9[h] (0.3)	0.5[h] (0.2)	0.9[h] (0.7)	0.1[h] (0.1)	0.1[h] (0.1)	1.4 (0.4)	1.3 (0.4)	0.9[h] (0.4)	1.2[h] (0.4)
Corn	1.5 (0.3)	2.5 (0.5)	1.3[h] (0.6)	1.6 (0.2)	2.0 (0.4)	3.8 (1.1)	2.2[h] (1.3)	2.5[h] (0.8)	1.4 (0.3)	2.0 (0.5)	1.0[h] (0.4)	1.3 (0.3)
Fried vegetables	0.4[h] (0.2)	0.4[h] (0.2)	0.4[h] (0.2)	0.3[h] (0.1)	0.7[h] (0.5)	0.4[h] (0.3)	0.4[h] (0.4)	0.2[h] (0.2)	0.3[h] (0.1)	0.4[h] (0.2)	0.4[h] (0.2)	0.3[h] (0.1)
Onions	0.6 (0.1)	0.8 (0.2)	1.1 (0.2)	1.0 (0.2)	0.2[h] (0.1)	0.3[h] (0.2)	0.3[h] (0.2)	0.2 (0.1)	0.8 (0.1)	1.0 (0.2)	1.4 (0.3)	1.3 (0.2)
Other vegetables and combinations (eg, avocado)	9.7 (1.0)	5.4[j] (0.5)	15.3 (1.0)	10.2 (0.8)	7.4 (1.4)	2.4[j] (0.7)	10.6 (1.3)	8.4 (2.0)	10.5 (1.3)	6.5[j] (0.7)	17.0 (1.4)	10.9 (0.8)
String beans	2.1 (0.4)	3.0 (0.4)	1.5[h] (0.5)	0.9 (0.3)	1.5 (0.5)	2.8 (0.4)	1.5[h] (1.0)	1.0[h] (0.5)	2.3 (0.5)	3.0 (0.5)	1.4[h] (0.6)	0.9[h] (0.3)
Vegetable juice	0.7 (0.2)	0.3[h] (0.1)	0.5[h] (0.2)	0.8[h] (0.4)	1.0[h] (0.6)	0.0 (0.0)	0.0 (0.0)	0.1[h] (0.1)	0.6 (0.2)	0.4[h] (0.2)	0.6[h] (0.3)	1.1[h] (0.5)
Total nonstarchy discrete vegetables	36.3 (2.5)	33.7 (2.3)	37.5 (2.5)	32.4 (1.2)	30.5 (3.3)	24.0 (3.0)	26.9 (2.4)	24.2 (1.3)	38.4 (2.4)	37.2 (2.4)	41.3 (2.9)	35.3 (1.6)
Starchy discrete vegetables												
French fries and fried white potatoes	8.4 (0.5)	12.1[j] (0.8)	4.3 (0.6)	6.8 (0.7)	12.5 (1.1)	16.6 (1.7)	6.5 (1.1)	10.7 (0.9)	6.9 (0.5)	10.5[j] (0.9)	3.4 (0.7)	5.3 (0.9)

WWEIA[b] food categories	All[c]				2–19 y[c]				20 y[c]			
	NHW[d]	NHB[e]	NHA[f]	Hispanic	NHW	NHB	NHA	Hispanic	NHW	NHB	NHA	Hispanic
Mashed potatoes and white potato mixtures	7.0 (0.8)	4.7 (1.0)	2.3 (0.6)	3.8 (0.8)	6.6 (1.4)	4.6 (1.4)	3.4[h] (1.5)	4.5[h] (1.8)	7.1 (0.9)	4.7 (1.2)	1.9 (0.5)	3.6 (0.6)
White potatoes baked or boiled	5.8 (0.7)	4.4 (0.7)	2.6 (0.5)	4.0 (0.8)	6.7 (1.2)	2.4[h] (1.1)	2.5[h] (0.8)	1.9[h] (0.6)	5.5 (0.8)	5.1 (0.8)	2.7 (0.6)	4.8 (1.0)
Other starchy	0.8 (0.2)	2.7 (0.5)	1.2[h] (0.5)	1.8 (0.4)	0.5[h] (0.2)	1.9[h] (1.0)	1.6[h] (1.1)	0.9[h] (0.5)	0.9[h] (0.3)	3.0 (0.7)	1.1[h] (0.4)	2.1 (0.4)
Beans, peas, legumes	0.2 (0.0)	0.4 (0.1)	2.1 (0.5)	0.4 (0.2)	0.3 (0.1)	0.3 (0.1)	1.7 (0.8)	0.4 (0.2)	0.2 (0.1)	0.4 (0.1)	2.3 (0.5)	0.5 (0.2)
Total starchy discrete vegetables	22.2[j] (1.2)	24.2[j] (1.3)	12.5 (1.1)	16.9 (1.6)	26.7 (2.4)	25.7 (2.0)	15.8 (2.5)	18.4 (2.2)	20.6[j] (1.1)	23.7[j] (1.6)	11.3 (1.2)	16.3 (1.8)
Mixed dishes	26.4 (1.6)	23.9[j] (0.9)	37.0 (2.3)	36.0 (1.0)	24.6[i] (1.6)	24.5[i] (1.2)	41.9 (3.3)	40.8 (2.3)	27.0 (2.0)	23.7[i] (1.3)	35.2 (2.6)	34.2 (1.1)
Other food	15.9 (0.9)	18.0 (0.9)	11.3 (1.1)	15.3 (1.0)	18.9 (2.1)	25.4 (3.3)	13.5 (1.2)	16.4 (1.4)	14.8 (0.9)	15.4 (0.5)	10.5 (1.3)	15.0 (1.3)

[a] Data from the National Center for Health Statistics (NCHS), National Health and Nutrition Examination Survey, 2017–2018.

[b] WWEIA = What We Eat in America.

[c] Percentages are based on WWEIA food categories, 2017–2018. Percentages may not add up to 100% due to rounding. Top 5 sources are shaded. Percentages are sex and age adjusted by the direct method to the 2000 projected US Census population using ages 2 to 5, 6 to 11, 12 to 19, 20 to 39, 40 to 59, and 60 and over years. All pairwise test performed using t statistic. P values adjusted using Bonferroni's method of correction for multiple comparison tests. Significance levels for statistical testing were at the $P < .05$ significance level.

[d] NHW = non-Hispanic White.

[e] NHB = non-Hispanic Black.

[f] NHA = non-Hispanic Asian.

[g] SE = standard error.

[h] Estimate does not meet National Center for Health Statistics standard for reliability.

[i] Significantly different from Hispanic.

[j] Significantly different from NHA.

Table 4.

Age and sex adjusted percent contribution of discrete vegetables, mixed dishes, and other foods to total vegetables intake on a given day, US population 2 years and over, by FPL[a], 2017–2018[b]

% of total cup equivalents of vegetables (SE[e])

WWEIA[c] food categories	All[d]			2-19 y[d]			20 y[d]		
	<130% FPL	130% to <350% FPL	350% FPL	<130% FPL	130% to <350% FPL	350% FPL	<130% FPL	130% to <350% FPL	350% FPL
Nonstarchy discrete vegetables									
Carrots	1.6[f] (0.3)	2.2 (0.2)	3.2 (0.5)	2.4 (0.6)	3.4 (0.5)	3.8 (1.0)	1.3[f] (0.3)	1.8 (0.3)	3.0 (0.4)
Tomatoes	2.5[f] (0.3)	2.8 (0.3)	5.0 (0.7)	1.2[fg] (0.4)	2.3[g] (0.7)	4.3 (1.0)	2.9[f] (0.3)	3.0 (0.4)	5.3 (0.8)
Other red and orange	0.8 (0.2)	1.2 (0.2)	1.6 (0.4)	0.5 (0.1)	0.6[g] (0.2)	0.7[g] (0.5)	0.9[g] (0.3)	1.4 (0.4)	1.9 (0.5)
Broccoli	3.0 (0.8)	2.2 (0.4)	4.2 (1.2)	2.7 (0.7)	2.5[g] (0.8)	6.2[g] (1.9)	3.1[g] (1.0)	2.0 (0.4)	3.5[g] (1.3)
Lettuce and lettuce salads	4.1[f] (0.3)	5.1 (0.6)	6.0 (0.6)	2.8 (0.4)	3.0 (0.6)	3.4 (0.9)	4.6[f] (0.4)	5.9 (0.8)	7.0 (0.6)
Spinach	1.0 (0.2)	0.8 (0.2)	2.5[g] (0.8)	0.4[g] (0.2)	0.8[g] (0.3)	1.4[g] (1.0)	1.2 (0.2)	0.8 (0.2)	2.8[g] (1.0)
Other dark green	0.9[g] (0.3)	0.6 (0.1)	0.9[g] (0.3)	1.2[g] (0.7)	0.3[g] (0.2)	0.2[g] (0.1)	0.8 (0.2)	0.7 (0.2)	1.1[g] (0.4)
Cabbage	1.0 (0.2)	0.4 (0.1	0.9 (0.2)	0.3[g] (0.2)	0.2[g] (0.1)	0.1[g] (0.1)	1.3 (0.3)	0.5[g] (0.2)	1.1 (0.3)
Coleslaw, nonlettuce salads	0.7 (0.1)	1.4[g] (0.6)	0.9 (0.2)	0.3[g] (0.1)	0.6[g] (0.3)	0.4[g] (0.4)	0.9 (0.2)	1.7[g] (0.7)	1.1 (0.3)
Corn	1.5 (0.2)	1.9 (0.4)	1.6 (0.3)	2.4 (0.4)	2.3 (0.6)	2.2[g] (0.8)	1.1 (0.2)	1.7 (0.4)	1.4 (0.3)
Fried vegetables	0.1[g] (0.0)	0.4 (0.1)	0.5[g] (0.3)	0.1[g] (0.1)	0.5[g] (0.3)	1.1[g] (1.0)	0.1[g] (0.0)	0.4 (0.1)	0.3[g] (0.1)
Onions	0.5 (0.1)	0.7 (0.1)	0.8 (0.1)	0.2 (0.1)	0.2[g] (0.1)	0.3[g] (0.1)	0.6 (0.1)	0.9 (0.1)	1.0 (0.1)
Other vegetables and combinations (eg, avocado)	7.8 (0.8)	9.7 (0.8)	9.9 (1.1)	6.8 (1.5)	5.9 (1.0)	7.9 (2.0)	8.2[f] (1.1)	11.1 (1.1)	10.7 (1.1)
String beans	1.8 (0.4)	2.3 (0.4)	1.8 (0.4)	1.9[g] (0.6)	1.3[g] (0.6)	1.3[g] (0.4)	1.8 (0.5)	2.7 (0.5)	2.0 (0.5)
Vegetable juice	0.7[g] (0.4)	0.5[g] (0.2)	1.0[g] (0.4)	0.0[g] (0.0)	0.1[g] (0.1)	1.6[g] (1.0)	0.9[g] (0.5)	0.7[g] (0.2)	0.8[g] (0.4)
Total nonstarchy discrete vegetables	28.0[f] (1.5)	32.3 (1.8)	40.8 (2.6)	23.3[f] (1.7)	23.9 (2.0)	35.0 (3.7)	29.7[f] (1.8)	35.4 (2.0)	42.9 (2.6)

WWEIA[c] food categories	All[d]			2–19 y[d]			20 y[d]		
	<130% FPL	130% to <350% FPL	350% FPL	<130% FPL	130% to <350% FPL	350% FPL	<130% FPL	130% to < 350% FPL	350% FPL
Starchy discrete vegetables									
French fries and fried white potatoes	10.6[f] (0.9)	8.2 (0.8)	7.2 (0.8)	13.8 (1.0)	12.4 (1.9)	9.8 (1.4)	9.4[f] (1.1)	6.6 (0.7)	6.3 (0.8)
Mashed potatoes and white potato mixtures	5.4 (0.9)	6.9 (0.9)	5.3 (0.8)	5.6 (1.4)	4.7 (1.4)	5.3 (1.5)	5.3 (1.0)	7.6 (0.9)	5.3 (0.9)
White potatoes baked or boiled	4.6 (0.8)	5.2 (0.7)	4.9 (0.7)	3.9 (1.1)	5.0[g] (1.8)	6.1 (1.6)	4.8 (1.0)	5.3 (0.7)	4.5 (0.6)
Other starchy	1.5 (0.3)	0.9 (0.2)	0.9[g] (0.4)	1.2 (0.3)	0.7[g] (0.4)	0.5[g] (0.3)	1.6 (0.4)	0.9 (0.2)	1.0[g] (0.5)
Beans, peas, legumes	0.3 (0.1)	0.3 (0.1)	0.5 (0.1)	0.2 (0.1)	0.3 (0.1)	0.7 (0.2)	0.3 (0.1)	0.3 (0.1)	0.4 (0.1)
Total starchy discrete vegetables	22.4 (1.1)	21.4 (1.5)	18.8 (1.3)	24.6 (1.7)	23.1 (3.5)	22.3 (2.7)	21.6 (1.5)	20.8 (1.1)	17.5 (1.2)
Mixed dishes	31.6[f] (1.6)	29.6 (1.3)	27.0 (1.5)	33.3[f] (1.7)	31.9 (3.1)	25.0 (2.3)	31.0 (1.7)	28.7 (1.6)	27.7 (2.0)
Other foods	18.4[f] (1.0)	17.0 (1.2)	14.3 (1.0)	18.5 (1.9)	20.8 (2.1)	18.7 (2.3)	18.4[f] (1.6)	15.6 (1.5)	12.6 (0.9)

[a]FPL = federal poverty level.

[b]Data from the National Center for Health Statistics, National Health and Nutrition Examination Survey, 2017–2018.

[c]WWEIA = What We Eat in America.

[d]Percentages are based on WWEIA food categories, 2017–2018. Percentages may not add up to 100% due to rounding. Top 5 sources are shaded. Percentages are sex and age adjusted by the direct method to the 2000 projected US Census population using ages 2 to 5, 6 to 11, 12 to 19, 20 to 39, 40 to 59, and 60 and over years. Tests for trends by family income evaluated using orthogonal polynomials. Significance levels for statistical testing were at the $P < .05$ significance level.

[e]SE = standard error.

[f]Linear family income level trend.

[g]Estimate does not meet National Center for Health Statistics standard for reliability.