

Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eAppendix. Supplemental Methods

Estimating carbohydrate and protein food sources

Food sources of carbohydrates and protein were not pre-coded in the National Health and Nutrition Examination Survey (NHANES) data. Therefore, we estimated the sources of carbohydrates and protein involved a multi-step process, using methods previously developed to estimate protein sources in NHANES.¹ First, the United States Department of Agriculture (USDA) Food and Nutrient Database for Dietary Studies (FNDDS)-USDA National Nutrient Database for Standard Reference (SR) link file, which includes a break-down of ingredients for foods consumed by NHANES participants, was used to identify the carbohydrate or protein source based on a pre-determined algorithm (eTable 1). One team member (Z.S.) manually assigned the carbohydrate or protein source to each ingredient, and a second team member (C.D.R.) reviewed the coding. Any discrepancies were resolved by consensus. When the ingredients could be assigned to a specific source, the amount of protein or carbohydrate from each source was summed for each participant. These foods underwent no additional manipulation. For example, a ‘Cobb salad’ has 7 ingredients in the database: lettuce, watercress, avocados, tomato, chicken breast, bacon, and egg (dressing is coded separately). For the coding for protein source, the first four will be coded as “other”, the chicken breast as “poultry”, the bacon as “processed meat”, and the egg as “egg”.

For foods that contained ingredients that could not be assigned to a specific source, we flagged these foods as being “mixed” that require additional manipulation. Some examples of these mixed foods include ice cream sandwiches, several types of soups, and mixed dishes that could not be disaggregated as other foods such as fried rice or pizza. To avoid having a large “other or mixed” category, the MyPyramid Equivalents Database (MPED) and the Food Patterns Equivalents Database (FPED)^{2,3} that report nutrient values for 32-37 food groups were used to estimate the protein/carbohydrate sources for those mixed foods. A prediction equation was developed to estimate the amount of protein and carbohydrate per MPED/FPED unit among non-mixed foods that only contained that MPED/FPED food group (e.g., per ounce equivalent of red meat or cup equivalent of milk). In this sense, information was borrowed from the non-mixed foods to inform the estimation of protein/carbohydrate for mixed foods. For each prediction equation, the predictive performance was evaluated by calculating a correlation coefficient between the modeled and actual value. All correlation coefficients between the modeled and actual values for protein/carbohydrate were ≥ 0.88 . For example, we estimated that each ounce-equivalent of poultry included 8.31 grams of protein and the correlation coefficient for that MPED/FPED food group was >0.99 . The modeled protein/carbohydrate values by MPED/FPED food group were then converted to a proportion of total modeled protein/carbohydrate in that food, after completing the assessment for each MPED/FPED food group. The modeled values were then applied to the total protein/carbohydrate amount in each specific food to estimate the final amount of protein/carbohydrate by source. At the end, the amount of protein/carbohydrate from each source in all foods were summed for each participant.

Methods of estimating usual intake of foods and nutrients

Intake of nutrients and foods among NHANES participants were assessed using 24-hour dietary recalls conducted by trained interviewers. From 1999 to 2002, one 24-hour dietary recall was conducted in-person in the NHANES Mobile Examination Center. From 2003 onwards, a second 24-hour recall was administered by a telephone interview approximately 3-10 days after the first recall. The 4-step Multiple-Pass Method was used in 1999-2001 and the new 5-step Automated Multiple-Pass Method was introduced from 2002, both of which are well-validated research-based multiple-pass approaches to enhance complete and accurate food recall and reduce respondent burden.⁴ All foods and beverages reported in dietary recalls were coded, and their nutrient values were determined using the USDA FNDDS. Dietary data from one or two 24-hour dietary recalls may not represent a person's usual intake because of substantial within-person variability due to day-to-day variations in food intake. Therefore, we applied the National Cancer Institute (NCI) method to estimate usual intake of foods and nutrients. As documented in prior literature, the NCI method is the preferred method for estimating usual intake from 24-hour dietary recalls.⁵ The NCI method requires that a subset of the individuals have multiple dietary data to estimate and separate within- and between-person variation. In our study, more than 70% of the included NHANES respondents provided two dietary recalls. We combined data from all cycles to apply the NCI method.

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A two-step approach was used to estimate usual intake in the NCI method. The first step modeled the probability of consuming a given food or nutrient and the amount for foods or nutrients that are not consumed daily by most persons. If more than 5% of the participants reported zero intake of a food/nutrient, this food/nutrient was considered as episodically consumed (such as dairy products and protein from dairy products); otherwise the food/nutrient was considered as daily consumed (such as refined grain and carbohydrate from refined grain). For foods/nutrients were consumed daily, the amount-only model was used in the first step (MIXTRAN SAS macro). For foods/nutrients were consumed episodically, we used a 2-part model that estimated the probability of consumption and the amount.

The second step of the NCI method involved estimating usual intake with parameters estimated from the first step using mixed-effect linear regression on a transformed scale with a person-specific effect (INDIVINT SAS macro). For each nutrient, the following covariates were specified for estimation of usual intake: an indicator of first- versus second-day dietary recall, day of the week when recall occurred (weekday *versus* weekend), age group (20 to 34, 35 to 49, 50 to 64, and ≥ 65 years), sex, and race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, and other).

eTable 1. Dietary Components Classified as Food Sources of Carbohydrate And Protein

Food groups	Subcategory	Items
Animal protein	Seafood	Canned tuna; dark meat fish e.g. mackerel, salmon, sardines, bluefish, swordfish; other fish e.g. cod, haddock, halibut; shrimp, lobster, scallops as a main dish; breaded fish cakes, pieces or fish sticks
	Unprocessed red meat	Beef, lamb or pork as a main dish e.g. steak, roast, ham, etc.; beef, lamb or pork as a mixed dish e.g. sandwich, stew, casserole, lasagna, etc.; hamburger; lean hamburger; regular hamburger
	Processed meat	Bacon; hotdogs; beef hotdogs; chicken or turkey hotdogs; salami, bologna, or other processed sandwich meats; other processed meats e.g. sausage, kielbasa, etc.
	Poultry	Chicken or turkey with skin; chicken or turkey without skin; chicken or turkey sandwich, chicken wings, chicken legs
	Egg	Eggs; egg whites or egg beaters; omega-3 fortified eggs; mayonnaise
	Dairy	Skim milk; 1% or 2% milk; whole milk; cream cheese; sour cream; cream e.g. coffee or whipped; cottage or ricotta cheese; other cheese e.g. American, cheddar, etc.; yogurt; flavored yogurt without artificial sweetener; plain or artificially sweetened yogurt; butter
	Residual animal protein from other sources	All other animal protein not in the 7 specific groups above
Plant protein	Whole grain	Whole-wheat flour, bulgur (cracked wheat), whole barley, whole-barley flour, oatmeal, oats, rye, whole cornmeal, popcorn, wild rice, brown rice, etc.
	Refined grain	White flour, de-germed cornmeal, white bread, white rice, etc.
	Nuts	Peanut butter; peanuts; walnuts and other nuts
	Legumes	Tofu or other soy protein; peas or lima beans; beans or lentils
	Residual plant protein from other sources	All other plant protein not in the 4 specific groups above
High-quality carbohydrates	Whole grain	As above
	Fruits	Any fresh, canned, frozen or dried fruits
	Legumes	As above
	Non-starchy vegetables	Salad greens, cooking greens, summer squash, broccoli, cucumber, peppers, onions, tomatoes, asparagus, carrots, sweet potatoes, pumpkin and winter squash, etc.
Low-quality carbohydrates	Refined grain	As above

Food groups	Subcategory	Items
	Potato	Potatoes
	Starchy vegetables other than potatoes	Immature breadfruit, burdock, cassava, corn (raw), dasheen, green bananas, hominy, parsnips, immature peas, plantains, salsify, tannier, etc.
	Added sugars	Sugar, candy, sugar-sweetened beverages, fruit snacks, brownie
	100% fruit juices	100% orange juice, apple juice, mixed fruit juice, etc.
	Residual carbohydrates	All other carbohydrate not included in the groups above (e.g. dairy foods)

eTable 2. Healthy Eating Index-2015 Components, Component Points, and Standards for Scoring

Component	Maximum		
	points	Standard for maximum score	Standard for minimum score of zero
Adequacy			
Total fruit	5	≥0.8 c equivalents/1 000 kcal	No fruit
Whole fruit	5	≥0.4 c equivalents/1 000 kcal	No whole fruit
Total vegetables	5	≥1.1 c equivalents/1 000 kcal	No vegetables
Greens and beans	5	≥0.2 c equivalents/1 000 kcal	No dark green vegetables or beans and peas
Whole grains	10	≥1.5 oz equivalents/1 000 kcal	No whole grains
Total dairy	10	≥1.3 c equivalents/1 000 kcal	No dairy
Total protein foods	5	≥2.5 oz equivalents/1 000 kcal	No protein foods
Seafood and plant proteins	5	≥0.8 c equivalents/1 000 kcal	No seafood or plant proteins
Fatty Acids	10	(PUFAs+MUFAs)/SFAs ≥2.5	(PUFAs+MUFAs)/SFAs ≤1.2
Moderation			
Sodium	10	≤1.8 oz equivalents/1 000 kcal	≥4.3 oz equivalents/1 000 kcal
Refined grains	10	≤1.1 g/1 000 kcal	≥2.0 g/1 000 kcal
Saturated fats	10	≤6.5% of energy	≥26% of energy
Added sugars	10	≤8% of energy	≥16% of energy

Abbreviation: PUFAs, polyunsaturated fatty acids; MUFAs, monounsaturated fatty acids; SFAs, saturated fatty acids.

eTable 3. Trends in Estimated Percent Energy (%E) and Absolute Intake (g/d) of Total and Subtypes of Macronutrients Among US Adults ≥20 Years by NHANES Survey Cycle, 1999-2016

	Survey-Weighted Mean (95% CI) ^a									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000 (n=4237)	2001-2002 (n=4744)	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
Estimated Percent Energy, %											
Total carbohydrate	52.5 (52.2, 52.7)	52.6 (52.4, 52.8)	51.9 (51.5, 52.3)	51.6 (51.4, 51.9)	51.8 (51.6, 52.0)	52.0 (51.7, 52.2)	51.8 (51.5, 52.0)	51.1 (50.9, 51.3)	50.5 (50.2, 50.8)	<.001	-2.02 (-2.41, -1.63)
High-quality carbohydrate ^b	7.42 (7.16, 7.69)	7.55 (7.36, 7.73)	7.48 (7.18, 7.78)	7.85 (7.58, 8.11)	8.09 (7.72, 8.45)	8.47 (8.27, 8.67)	8.70 (8.47, 8.93)	8.50 (8.32, 8.69)	8.65 (8.37, 8.93)	<.001	1.23 (0.84, 1.61)
Low-quality carbohydrate ^c	45.1 (44.8, 45.3)	45.0 (44.8, 45.3)	44.4 (44.1, 44.8)	43.8 (43.4, 44.2)	43.7 (43.3, 44.1)	43.5 (43.3, 43.7)	43.1 (42.7, 43.4)	42.6 (42.3, 42.9)	41.8 (41.4, 42.3)	<.001	-3.25 (-3.75, -2.74)
Total protein	15.5 (15.4, 15.6)	15.6 (15.5, 15.7)	15.8 (15.6, 15.9)	16.0 (15.9, 16.1)	16.1 (15.9, 16.2)	16.1 (16.0, 16.2)	16.1 (16.0, 16.2)	16.3 (16.2, 16.4)	16.4 (16.3, 16.5)	<.001	0.82 (0.67, 0.97)
Animal protein	10.2 (10.1, 10.2)	10.1 (10.0, 10.2)	10.3 (10.2, 10.4)	10.5 (10.4, 10.5)	10.5 (10.4, 10.5)	10.4 (10.3, 10.5)	10.4 (10.3, 10.4)	10.6 (10.5, 10.6)	10.6 (10.5, 10.7)	<.001	0.44 (0.33, 0.54)
Plant protein	5.38 (5.32, 5.43)	5.45 (5.40, 5.50)	5.49 (5.42, 5.56)	5.57 (5.52, 5.62)	5.58 (5.52, 5.65)	5.68 (5.65, 5.71)	5.74 (5.70, 5.79)	5.73 (5.68, 5.78)	5.76 (5.68, 5.84)	<.001	0.38 (0.28, 0.49)
Total fat	32.0 (31.7, 32.2)	31.8 (31.7, 32.0)	32.3 (32.0, 32.7)	32.3 (32.1, 32.6)	32.1 (31.9, 32.4)	31.9 (31.7, 32.2)	32.1 (31.9, 32.4)	32.6 (32.4, 32.9)	33.2 (32.9, 33.4)	<.001	1.20 (0.84, 1.55)
Saturated fatty acids	11.5 (11.4, 11.6)	11.4 (11.4, 11.5)	11.6 (11.5, 11.8)	11.7 (11.6, 11.8)	11.6 (11.4, 11.7)	11.4 (11.3, 11.6)	11.4 (11.3, 11.5)	11.6 (11.5, 11.8)	11.9 (11.8, 12.0)	<.001	0.36 (0.20, 0.51)
Monounsaturated fatty acids	12.9 (12.8, 13.0)	12.8 (12.8, 12.9)	13.0 (12.9, 13.2)	12.9 (12.8, 13.0)	12.9 (12.8, 13.0)	12.7 (12.6, 12.8)	12.7 (12.6, 12.8)	12.8 (12.7, 12.9)	13.1 (13.0, 13.2)	<.001	0.19 (0.03, 0.36)
Polyunsaturated fatty acids	7.58 (7.53, 7.63)	7.58 (7.53, 7.63)	7.65 (7.57, 7.74)	7.68 (7.59, 7.76)	7.71 (7.67, 7.76)	7.80 (7.74, 7.86)	8.06 (8.01, 8.12)	8.15 (8.08, 8.23)	8.23 (8.16, 8.30)	<.001	0.65 (0.56, 0.74)

	Survey-Weighted Mean (95% CI) ^a									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000 (n=4237)	2001-2002 (n=4744)	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
Estimated Absolute Intake, g/d^d											
Total carbohydrate	262 (261, 263)	262 (261, 263)	259 (257, 261)	258 (256, 259)	259 (257, 260)	259 (258, 261)	258 (257, 259)	255 (254, 256)	252 (251, 253)	<.001	-9.92 (-11.8, -8.00)
High-quality carbohydrate ^b	37.3 (35.8, 38.7)	38.1 (37.2, 39.1)	37.6 (36.0, 39.1)	39.0 (37.7, 40.3)	39.8 (37.9, 41.7)	41.9 (41.0, 42.8)	43.1 (42.0, 44.2)	41.6 (40.8, 42.5)	42.3 (40.8, 43.7)	<.001	5.00 (2.99, 7.00)
Low-quality carbohydrate ^c	224 (222, 225)	223 (222, 225)	221 (219, 223)	218 (216, 220)	218 (216, 220)	217 (216, 218)	215 (213, 216)	213 (211, 214)	209 (207, 211)	<.001	-14.4 (-16.9, -11.9)
Total protein	78.2 (77.7, 78.6)	78.4 (78.0, 78.8)	79.1 (78.5, 79.8)	80.2 (79.9, 80.5)	80.1 (79.6, 80.6)	80.6 (80.1, 81.0)	80.4 (79.9, 80.9)	81.1 (80.7, 81.5)	81.3 (80.8, 81.8)	<.001	3.09 (2.43, 3.76)
Animal protein	51.2 (50.9, 51.5)	50.9 (50.6, 51.3)	51.5 (51.0, 52.1)	52.3 (52.1, 52.6)	52.2 (51.9, 52.6)	52.2 (51.7, 52.7)	51.7 (51.3, 52.1)	52.6 (52.3, 52.9)	52.7 (52.3, 53.1)	<.001	1.49 (1.01, 1.97)
Plant protein	27.0 (26.7, 27.3)	27.4 (27.2, 27.7)	27.6 (27.2, 28.0)	27.9 (27.7, 28.1)	27.9 (27.5, 28.2)	28.4 (28.2, 28.5)	28.7 (28.5, 28.9)	28.5 (28.3, 28.8)	28.6 (28.2, 29.0)	<.001	1.61 (1.10, 2.11)
Total fat	70.8 (70.2, 71.4)	70.5 (70.1, 70.9)	71.6 (70.8, 72.5)	71.7 (71.2, 72.3)	71.4 (70.9, 71.9)	70.9 (70.3, 71.4)	71.4 (70.9, 71.9)	72.6 (72.0, 73.1)	73.9 (73.3, 74.4)	<.001	3.07 (2.27, 3.87)
Saturated fatty acids	25.4 (25.2, 25.7)	25.3 (25.1, 25.5)	25.7 (25.4, 26.1)	26.0 (25.8, 26.2)	25.7 (25.4, 26.0)	25.4 (25.1, 25.6)	25.3 (25.0, 25.6)	25.9 (25.7, 26.2)	26.5 (26.2, 26.7)	<.001	1.02 (0.69, 1.35)
Monounsaturated fatty acids	28.5 (28.2, 28.8)	28.4 (28.2, 28.5)	28.9 (28.5, 29.2)	28.7 (28.5, 28.9)	28.6 (28.4, 28.8)	28.2 (27.9, 28.4)	28.2 (28.0, 28.4)	28.5 (28.3, 28.7)	29.1 (28.9, 29.4)	<.001	0.64 (0.26, 1.02)
Polyunsaturated fatty acids	16.9 (16.7, 17.0)	16.9 (16.8, 17.0)	17.0 (16.8, 17.2)	17.1 (16.9, 17.3)	17.1 (17.0, 17.2)	17.3 (17.2, 17.5)	17.9 (17.8, 18.0)	18.1 (17.9, 18.3)	18.3 (18.1, 18.4)	<.001	1.41 (1.21, 1.61)

^a Data were adjusted for NHANES survey weights.

^b High-quality carbohydrate was defined as carbohydrate from whole grains, whole fruit, legumes, and non-starchy vegetables.

^c Low-quality carbohydrate was defined as carbohydrate from refined grains, added sugar, fruit juice, potato, other starchy vegetables, and other sources.

^d Absolute Intake was adjusted for energy to 2000 kcal/d using the residual method.

eTable 4. Trends in Estimated Percent Energy (%E) and Absolute Intake (g/d) of Total and Subtypes of Macronutrients Among US Adults ≥20 Years by NHANES Survey Cycle, 2003-2016

	Survey-Weighted Mean (95% CI) ^a							P for Trend	2015-2016 versus 2003- 2004, Difference (95% CI)
	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
Estimated Percent Energy, %									
Total carbohydrate	51.9 (51.5, 52.3)	51.6 (51.4, 51.9)	51.8 (51.6, 52.0)	52.0 (51.7, 52.2)	51.8 (51.5, 52.0)	51.1 (50.9, 51.3)	50.5 (50.2, 50.8)	<.001	-1.45 (-1.94, -0.96)
High-quality carbohydrate ^b	7.48 (7.18, 7.78)	7.85 (7.58, 8.11)	8.09 (7.72, 8.45)	8.47 (8.27, 8.67)	8.70 (8.47, 8.93)	8.50 (8.32, 8.69)	8.65 (8.37, 8.93)	<.001	1.17 (0.76, 1.58)
Low-quality carbohydrate ^c	44.4 (44.1, 44.8)	43.8 (43.4, 44.2)	43.7 (43.3, 44.1)	43.5 (43.3, 43.7)	43.1 (42.7, 43.4)	42.6 (42.3, 42.9)	41.8 (41.4, 42.3)	<.001	-2.62 (-3.20, -2.05)
Total protein	15.8 (15.6, 15.9)	16.0 (15.9, 16.1)	16.1 (15.9, 16.2)	16.1 (16.0, 16.2)	16.1 (16.0, 16.2)	16.3 (16.2, 16.4)	16.4 (16.3, 16.5)	<.001	0.61 (0.44, 0.79)
Animal protein	10.3 (10.2, 10.4)	10.5 (10.4, 10.5)	10.5 (10.4, 10.5)	10.4 (10.3, 10.5)	10.4 (10.3, 10.4)	10.6 (10.5, 10.6)	10.6 (10.5, 10.7)	<.001	0.35 (0.21, 0.48)
Plant protein	5.49 (5.42, 5.56)	5.57 (5.52, 5.62)	5.58 (5.52, 5.65)	5.68 (5.65, 5.71)	5.74 (5.70, 5.79)	5.73 (5.68, 5.78)	5.76 (5.68, 5.84)	<.001	0.26 (0.16, 0.37)
Total fat	32.3 (32.0, 32.7)	32.3 (32.1, 32.6)	32.1 (31.9, 32.4)	31.9 (31.7, 32.2)	32.1 (31.9, 32.4)	32.6 (32.4, 32.9)	33.2 (32.9, 33.4)	<.001	0.84 (0.39, 1.29)
Saturated fatty acids	11.6 (11.5, 11.8)	11.7 (11.6, 11.8)	11.6 (11.4, 11.7)	11.4 (11.3, 11.6)	11.4 (11.3, 11.5)	11.6 (11.5, 11.8)	11.9 (11.8, 12.0)	<.001	0.24 (0.05, 0.42)
Monounsaturated fatty acids	13.0 (12.9, 13.2)	12.9 (12.8, 13.0)	12.9 (12.8, 13.0)	12.7 (12.6, 12.8)	12.7 (12.6, 12.8)	12.8 (12.7, 12.9)	13.1 (13.0, 13.2)	<.001	0.02 (-0.17, 0.22)
Polyunsaturated fatty acids	7.65 (7.57, 7.74)	7.68 (7.59, 7.76)	7.71 (7.67, 7.76)	7.80 (7.74, 7.86)	8.06 (8.01, 8.12)	8.15 (8.08, 8.23)	8.23 (8.16, 8.30)	<.001	0.58 (0.47, 0.69)
Estimated Absolute Intake, g/d^d									
Total carbohydrate	259 (257, 261)	258 (256, 259)	259 (257, 260)	259 (258, 261)	258 (257, 259)	255 (254, 256)	252 (251, 253)	<.001	-7.08 (-9.53, -4.64)

	Survey-Weighted Mean (95% CI) ^a							P for Trend	2015-2016 versus 2003- 2004, Difference (95% CI)
	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
High-quality carbohydrate ^b	37.6 (36.0, 39.1)	39.0 (37.7, 40.3)	39.8 (37.9, 41.7)	41.9 (41.0, 42.8)	43.1 (42.0, 44.2)	41.6 (40.8, 42.5)	42.3 (40.8, 43.7)	<.001	4.69 (2.58, 6.81)
Low-quality carbohydrate ^c	221 (219, 223)	218 (216, 220)	218 (216, 220)	217 (216, 218)	215 (213, 216)	213 (211, 214)	209 (207, 211)	<.001	-11.5 (-14.3, -8.6)
Total protein	79.1 (78.5, 79.8)	80.2 (79.9, 80.5)	80.1 (79.6, 80.6)	80.6 (80.1, 81.0)	80.4 (79.9, 80.9)	81.1 (80.7, 81.5)	81.3 (80.8, 81.8)	<.001	2.14 (1.30, 2.98)
Animal protein	51.5 (51.0, 52.1)	52.3 (52.1, 52.6)	52.2 (51.9, 52.6)	52.2 (51.7, 52.7)	51.7 (51.3, 52.1)	52.6 (52.3, 52.9)	52.7 (52.3, 53.1)	<.001	1.12 (0.47, 1.76)
Plant protein	27.6 (27.2, 28.0)	27.9 (27.7, 28.1)	27.9 (27.5, 28.2)	28.4 (28.2, 28.5)	28.7 (28.5, 28.9)	28.5 (28.3, 28.8)	28.6 (28.2, 29.0)	<.001	1.02 (0.46, 1.58)
Total fat	71.6 (70.8, 72.5)	71.7 (71.2, 72.3)	71.4 (70.9, 71.9)	70.9 (70.3, 71.4)	71.4 (70.9, 71.9)	72.6 (72.0, 73.1)	73.9 (73.3, 74.4)	<.001	2.23 (1.23, 3.24)
Saturated fatty acids	25.7 (25.4, 26.1)	26.0 (25.8, 26.2)	25.7 (25.4, 26.0)	25.4 (25.1, 25.6)	25.3 (25.0, 25.6)	25.9 (25.7, 26.2)	26.5 (26.2, 26.7)	<.001	0.74 (0.34, 1.14)
Monounsaturated fatty acids	28.9 (28.5, 29.2)	28.7 (28.5, 28.9)	28.6 (28.4, 28.8)	28.2 (27.9, 28.4)	28.2 (28.0, 28.4)	28.5 (28.3, 28.7)	29.1 (28.9, 29.4)	<.001	0.25 (-0.19, 0.68)
Polyunsaturated fatty acids	17.0 (16.8, 17.2)	17.1 (16.9, 17.3)	17.1 (17.0, 17.2)	17.3 (17.2, 17.5)	17.9 (17.8, 18.0)	18.1 (17.9, 18.3)	18.3 (18.1, 18.4)	<.001	1.25 (1.00, 1.50)

^a Data were adjusted for NHANES survey weights.

^b High-quality carbohydrate was defined as carbohydrate from whole grains, whole fruit, legumes, and non-starchy vegetables.

^c Low-quality carbohydrate was defined as carbohydrate from refined grains, added sugar, fruit juice, potato, other starchy vegetables, and other sources.

^d Absolute Intake was adjusted for energy to 2000 kcal/d using the residual method.

eTable 5. Trends in Estimated Percent Energy (%E) and Absolute Intake (g/d) of Total and Subtypes of Macronutrients, After Adjustment for Age, Sex, Race/Ethnicity, Education, and Income Among US Adults ≥20 Years by NHANES Survey Cycle, 1999-2016^a

	Survey-Weighted Mean (95% CI) ^b									P for Trend	2015-2016 versus 1999- 2000, Difference (95% CI)
	1999-2000 (n=3631)	2001-2002 (n=4424)	2003-2004 (n=4206)	2005-2006 (n=4325)	2007-2008 (n=4933)	2009-2010 (n=5218)	2011-2012 (n=4433)	2013-2014 (n=4684)	2015-2016 (n=4535)		
Estimated Percent Energy, %											
Total carbohydrate	53.3 (53.0, 53.6)	53.5 (53.3, 53.7)	52.8 (52.4, 53.2)	52.6 (52.3, 52.8)	52.6 (52.5, 52.8)	52.7 (52.5, 53.0)	52.5 (52.3, 52.8)	51.9 (51.7, 52.1)	51.2 (51.0, 51.4)	<.001	-2.14 (-2.51, -1.78)
High-quality carbohydrate ^b	8.38 (8.17, 8.58)	8.49 (8.36, 8.62)	8.44 (8.21, 8.67)	8.71 (8.51, 8.92)	8.91 (8.61, 9.22)	9.21 (9.04, 9.37)	9.38 (9.15, 9.61)	9.13 (8.98, 9.27)	9.08 (8.87, 9.30)	<.001	0.71 (0.41, 1.00)
Low-quality carbohydrate ^c	44.9 (44.7, 45.2)	45.0 (44.8, 45.2)	44.3 (44.1, 44.6)	43.8 (43.5, 44.2)	43.7 (43.4, 44.1)	43.5 (43.3, 43.8)	43.2 (42.9, 43.4)	42.8 (42.5, 43.0)	42.1 (41.8, 42.4)	<.001	-2.85 (-3.25, -2.45)
Total protein	15.8 (15.7, 15.9)	15.8 (15.7, 15.9)	16.0 (15.9, 16.2)	16.3 (16.2, 16.4)	16.3 (16.2, 16.4)	16.4 (16.3, 16.5)	16.3 (16.2, 16.4)	16.5 (16.4, 16.6)	16.5 (16.4, 16.6)	<.001	0.74 (0.60, 0.88)
Animal protein	10.3 (10.2, 10.4)	10.3 (10.2, 10.3)	10.4 (10.3, 10.5)	10.6 (10.5, 10.7)	10.6 (10.5, 10.7)	10.6 (10.5, 10.7)	10.5 (10.4, 10.5)	10.7 (10.6, 10.8)	10.7 (10.6, 10.8)	<.001	0.44 (0.33, 0.54)
Plant protein	5.51 (5.46, 5.56)	5.57 (5.52, 5.61)	5.63 (5.58, 5.68)	5.69 (5.64, 5.73)	5.69 (5.63, 5.75)	5.78 (5.74, 5.81)	5.83 (5.78, 5.87)	5.80 (5.75, 5.85)	5.81 (5.74, 5.88)	<.001	0.30 (0.21, 0.39)
Total fat	30.9 (30.6, 31.2)	30.7 (30.5, 30.9)	31.2 (30.8, 31.5)	31.1 (30.9, 31.4)	31.1 (30.9, 31.2)	30.9 (30.7, 31.1)	31.2 (30.9, 31.4)	31.6 (31.4, 31.8)	32.3 (32.1, 32.5)	<.001	1.40 (1.07, 1.73)
Saturated fatty acids	10.9 (10.8, 11.0)	10.8 (10.7, 10.9)	11.0 (10.8, 11.1)	11.1 (11.0, 11.1)	10.9 (10.8, 11.0)	10.8 (10.8, 10.9)	10.8 (10.7, 10.9)	11.1 (11.0, 11.2)	11.4 (11.3, 11.4)	<.001	0.49 (0.37, 0.62)
Monounsaturated fatty acids	12.5 (12.4, 12.7)	12.5 (12.4, 12.5)	12.7 (12.5, 12.8)	12.5 (12.4, 12.6)	12.5 (12.4, 12.6)	12.3 (12.3, 12.4)	12.4 (12.3, 12.5)	12.5 (12.4, 12.5)	12.8 (12.7, 12.9)	<.001	0.26 (0.10, 0.43)
Polyunsaturated fatty acids	7.50 (7.43, 7.56)	7.46 (7.40, 7.52)	7.56 (7.47, 7.64)	7.56 (7.47, 7.64)	7.60 (7.55, 7.65)	7.70 (7.65, 7.76)	7.96 (7.92, 8.01)	8.04 (7.98, 8.10)	8.14 (8.08, 8.20)	<.001	0.65 (0.56, 0.74)
Estimated Absolute Intake, g/d^c											
Total carbohydrate	266 (265, 268)	267 (266, 268)	264 (262, 265)	262 (261, 264)	263 (262, 264)	263 (262, 264)	262 (261, 264)	259 (258, 260)	256 (255, 257)	<.001	-10.6 (-12.4, -8.8)

	Survey-Weighted Mean (95% CI) ^b									P for Trend	2015-2016 versus 1999- 2000, Difference (95% CI)
	1999-2000 (n=3631)	2001-2002 (n=4424)	2003-2004 (n=4206)	2005-2006 (n=4325)	2007-2008 (n=4933)	2009-2010 (n=5218)	2011-2012 (n=4433)	2013-2014 (n=4684)	2015-2016 (n=4535)		
High-quality carbohydrate ^b	40.5 (39.4, 41.6)	41.2 (40.5, 41.9)	40.7 (39.6, 41.9)	41.7 (40.6, 42.8)	42.5 (40.9, 44.0)	44.1 (43.3, 44.9)	45.1 (44.0, 46.2)	43.4 (42.7, 44.1)	43.3 (42.1, 44.5)	<.001	2.80 (1.15, 4.44)
Low-quality carbohydrate ^c	225 (223, 226)	225 (224, 226)	222 (220, 223)	220 (218, 221)	219 (218, 221)	218 (217, 220)	217 (215, 218)	215 (214, 216)	212 (210, 213)	<.001	-12.8 (-14.7, -10.8)
Total protein	78.6 (78.2, 79.0)	78.7 (78.4, 79.1)	79.7 (79.1, 80.2)	80.7 (80.4, 81.0)	80.6 (80.2, 81.0)	81.0 (80.7, 81.3)	80.6 (80.3, 81.0)	81.4 (81.0, 81.7)	81.5 (81.1, 81.9)	<.001	2.90 (2.33, 3.46)
Animal protein	51.2 (51.0, 51.5)	51.0 (50.7, 51.4)	51.7 (51.2, 52.2)	52.5 (52.2, 52.8)	52.4 (52.1, 52.7)	52.4 (52.0, 52.8)	51.8 (51.5, 52.0)	52.7 (52.4, 53.0)	52.8 (52.5, 53.2)	<.001	1.63 (1.19, 2.06)
Plant protein	27.4 (27.2, 27.7)	27.7 (27.5, 27.9)	28.0 (27.7, 28.2)	28.2 (28.0, 28.4)	28.1 (27.9, 28.4)	28.6 (28.4, 28.8)	28.9 (28.7, 29.1)	28.6 (28.4, 28.9)	28.7 (28.3, 29.0)	<.001	1.27 (0.83, 1.70)
Total fat	68.7 (68.0, 69.4)	68.3 (67.8, 68.7)	69.4 (68.7, 70.2)	69.4 (68.9, 69.9)	69.3 (68.9, 69.7)	68.9 (68.5, 69.3)	69.5 (69.0, 70.0)	70.6 (70.2, 70.9)	72.1 (71.7, 72.5)	<.001	3.44 (2.68, 4.19)
Saturated fatty acids	24.2 (23.9, 24.4)	24.0 (23.8, 24.2)	24.4 (24.1, 24.7)	24.7 (24.5, 24.9)	24.4 (24.3, 24.6)	24.2 (24.0, 24.4)	24.2 (24.0, 24.4)	24.8 (24.7, 25.0)	25.5 (25.3, 25.6)	<.001	1.28 (1.00, 1.56)
Monounsaturated fatty acids	27.9 (27.5, 28.2)	27.7 (27.5, 27.9)	28.2 (27.9, 28.5)	28.0 (27.7, 28.2)	28.0 (27.8, 28.2)	27.6 (27.4, 27.7)	27.6 (27.4, 27.8)	27.9 (27.8, 28.0)	28.6 (28.4, 28.8)	<.001	0.75 (0.37, 1.13)
Polyunsaturated fatty acids	16.7 (16.5, 16.8)	16.6 (16.4, 16.7)	16.8 (16.6, 17.0)	16.8 (16.6, 17.0)	16.9 (16.8, 17.0)	17.1 (17.0, 17.2)	17.7 (17.6, 17.8)	17.8 (17.7, 18.0)	18.1 (17.9, 18.2)	<.001	1.41 (1.21, 1.61)

^a Adjusted for sex (male, female), age group (20-34, 35-49, 50-64, ≥65 y), race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, other), education level (less than 12th grade, high school graduate, and college or above), and ratio of family income to poverty (<1.30, 1.30-3.49, ≥3.5).

^b Data were adjusted for NHANES survey weights.

^c Absolute Intake was adjusted for energy to 2000 kcal/d using the residual method.

eTable 6. Trends in Estimated Absolute Intake of Carbohydrate and Protein From Different Sources (g/d) Among Adults ≥20 Years by NHANES Survey Cycle, 1999-2016^a

Estimated Absolute Intake, g/d	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000 (n=4237)	2001-2002 (n=4744)	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
Carbohydrate											
High quality sources											
	10.1	10.9	10.5	11.4	11.4	12.3	13.0	12.6	13.0		2.95
Whole grains	(9.65, 10.5)	(10.5, 11.3)	(10.0, 11.1)	(10.8, 12.0)	(10.7, 12.1)	(11.9, 12.7)	(12.3, 13.6)	(12.2, 13.0)	(12.4, 13.6)	<.001	(2.20, 3.70)
	14.3	14.6	14.3	14.9	15.5	16.5	16.3	15.5	15.5		1.21
Whole fruit	(13.5, 15.2)	(14.1, 15.1)	(13.4, 15.2)	(14.2, 15.6)	(14.6, 16.4)	(16.1, 16.8)	(15.6, 16.9)	(14.8, 16.1)	(14.8, 16.3)	<.001	(0.09, 2.34)
	8.41	8.42	8.56	8.52	8.47	8.70	9.09	8.87	8.84		0.44
Non-starchy vegetable	(8.24, 8.57)	(8.29, 8.55)	(8.34, 8.77)	(8.32, 8.72)	(8.25, 8.69)	(8.54, 8.86)	(8.88, 9.29)	(8.74, 9.01)	(8.66, 9.03)	<.001	(0.19, 0.69)
	4.44	4.26	4.19	4.11	4.33	4.50	4.81	4.66	4.83		0.38
Legumes	(4.13, 4.75)	(4.01, 4.51)	(3.86, 4.51)	(3.86, 4.36)	(4.04, 4.62)	(4.16, 4.84)	(4.49, 5.14)	(4.46, 4.86)	(4.58, 5.07)	<.001	(-0.01, 0.78)
Low-quality sources											
	76.4	76.6	75.6	75.5	76.6	77.7	79.4	79.2	79.6		3.12
Refined grains	(75.2, 77.6)	(75.5, 77.6)	(74.5, 76.6)	(74.5, 76.5)	(75.8, 77.5)	(76.6, 78.9)	(78.3, 80.5)	(78.4, 80.1)	(78.1, 81.0)	<.001	(1.26, 4.99)
	19.6	19.6	19.2	18.2	17.2	17.4	16.6	14.3	14.1		-5.53
Fruit juice	(18.5, 20.7)	(18.7, 20.4)	(17.7, 20.6)	(17.1, 19.2)	(16.2, 18.2)	(16.7, 18.0)	(15.1, 18.1)	(13.7, 15.0)	(13.2, 14.9)	<.001	(-6.93, -4.14)
	12.5	12.5	12.6	12.5	12.6	12.4	12.2	12.3	12.5		-0.05
Potato	(12.2, 12.8)	(12.3, 12.7)	(12.3, 13.0)	(12.2, 12.9)	(12.3, 13.0)	(12.2, 12.7)	(12.0, 12.4)	(12.1, 12.5)	(12.2, 12.7)	.28	(-0.45, 0.36)
	2.93	2.97	2.96	3.00	2.97	2.92	2.88	2.82	2.84		-0.09
Other starchy vegetable	(2.89, 2.97)	(2.93, 3.00)	(2.88, 3.04)	(2.90, 3.10)	(2.91, 3.03)	(2.86, 2.98)	(2.81, 2.95)	(2.78, 2.86)	(2.78, 2.90)	<.001	(-0.16, -0.02)

Estimated Absolute Intake, g/d	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000 (n=4237)	2001-2002 (n=4744)	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
	79.3	78.3	76.2	73.7	75.0	73.6	73.3	73.7	72.3		-6.96
Added sugar	(76.7, 81.8)	(76.5, 80.0)	(74.1, 78.3)	(72.0, 75.5)	(72.4, 77.6)	(72.4, 74.7)	(71.5, 75.0)	(72.3, 75.2)	(70.3, 74.3)	<.001	(-10.22, -3.69)
	32.3	33.1	34.0	34.8	33.4	32.6	30.1	30.3	28.0		-4.35
Other sources	(32.0, 32.7)	(32.7, 33.6)	(33.2, 34.7)	(34.3, 35.3)	(32.8, 34.0)	(32.2, 32.9)	(29.5, 30.7)	(29.7, 30.8)	(27.4, 28.6)	<.001	(-5.08, -3.62)
Protein											
Animal sources	13.6	13.3	13.7	13.7	13.7	13.6	13.6	13.6	13.7		0.13
Unprocessed red meat	(13.4, 13.7)	(13.2, 13.5)	(13.5, 13.9)	(13.5, 13.9)	(13.5, 13.9)	(13.4, 13.8)	(13.3, 13.9)	(13.5, 13.7)	(13.5, 13.9)	.26	(-0.13, 0.39)
	5.47	5.54	5.63	5.69	5.62	5.56	5.53	5.57	5.55		0.08
Processed meat	(5.35, 5.60)	(5.43, 5.65)	(5.44, 5.83)	(5.48, 5.90)	(5.49, 5.75)	(5.38, 5.73)	(5.42, 5.63)	(5.41, 5.72)	(5.45, 5.65)	.75	(-0.09, 0.24)
	12.0	12.0	12.0	12.2	12.4	12.3	12.3	12.5	12.5		0.46
Poultry	(11.8, 12.2)	(11.8, 12.2)	(11.7, 12.3)	(12.0, 12.5)	(12.1, 12.7)	(12.0, 12.6)	(11.9, 12.6)	(12.3, 12.8)	(12.1, 12.8)	.003	(0.08, 0.84)
	3.78	3.71	3.80	3.88	3.81	3.91	3.90	3.93	3.88		0.09
Seafood	(3.69, 3.88)	(3.64, 3.79)	(3.66, 3.95)	(3.76, 4.00)	(3.70, 3.93)	(3.77, 4.05)	(3.75, 4.05)	(3.77, 4.10)	(3.73, 4.03)	.08	(-0.08, 0.27)
	12.7	12.7	12.8	13.0	12.9	13.0	12.5	12.9	13.0		0.34
Dairy	(12.5, 12.9)	(12.5, 12.9)	(12.4, 13.1)	(12.8, 13.3)	(12.5, 13.3)	(12.8, 13.2)	(12.1, 12.8)	(12.7, 13.2)	(12.6, 13.4)	.07	(-0.12, 0.81)
	3.51	3.51	3.50	3.71	3.73	3.72	3.75	3.87	3.93		0.42
Eggs	(3.45, 3.57)	(3.46, 3.55)	(3.39, 3.61)	(3.64, 3.78)	(3.65, 3.81)	(3.62, 3.82)	(3.70, 3.81)	(3.80, 3.94)	(3.84, 4.01)	<.001	(0.31, 0.52)
	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03		0.00
Other animal sources	(0.03, 0.04)	(0.03, 0.03)	(0.03, 0.03)	(0.03, 0.03)	(0.02, 0.03)	(0.03, 0.03)	(0.03, 0.03)	(0.03, 0.03)	(0.03, 0.03)	<.001	(-0.01, 0.00)

Estimated Absolute Intake, g/d	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000 (n=4237)	2001-2002 (n=4744)	2003-2004 (n=4448)	2005-2006 (n=4520)	2007-2008 (n=5420)	2009-2010 (n=5762)	2011-2012 (n=4801)	2013-2014 (n=5047)	2015-2016 (n=5017)		
Plant sources	1.93	2.09	2.01	2.20	2.22	2.34	2.60	2.51	2.47		0.54
Whole grains	(1.85, 2.01) 13.3	(2.01, 2.17) 13.4	(1.91, 2.11) 13.4	(2.08, 2.31) 13.3	(2.07, 2.37) 13.4	(2.28, 2.41) 13.5	(2.45, 2.75) 13.5	(2.43, 2.60) 13.4	(2.34, 2.60) 13.3	<.001	(0.39, 0.70) 0.04
Refined grains	(13.1, 13.4) 1.82	(13.3, 13.5) 1.87	(13.3, 13.6) 1.96	(13.2, 13.5) 2.02	(13.3, 13.5) 1.94	(13.3, 13.6) 2.05	(13.4, 13.6) 2.15	(13.3, 13.6) 2.20	(13.1, 13.5) 2.26	.41	(-0.19, 0.27) 0.44
Nuts	(1.73, 1.90) 1.55	(1.80, 1.94) 1.49	(1.84, 2.08) 1.47	(1.94, 2.10) 1.45	(1.83, 2.04) 1.52	(1.97, 2.13) 1.54	(2.04, 2.27) 1.65	(2.07, 2.33) 1.61	(2.07, 2.44) 1.68	<.001	(0.24, 0.64) 0.13
Legumes	(1.45, 1.65) 0.60	(1.41, 1.57) 0.61	(1.37, 1.57) 0.74	(1.36, 1.53) 0.75	(1.43, 1.61) 0.76	(1.43, 1.65) 0.81	(1.54, 1.75) 0.73	(1.55, 1.68) 0.77	(1.60, 1.76) 0.95	.001	(0.00, 0.26) 0.35
Soy	(0.53, 0.67) 7.82	(0.56, 0.66) 7.93	(0.65, 0.83) 7.97	(0.66, 0.84) 8.11	(0.69, 0.83) 7.99	(0.76, 0.86) 8.13	(0.66, 0.80) 8.06	(0.69, 0.85) 7.98	(0.82, 1.09) 7.91	<.001	(0.20, 0.51) 0.09
Other plant sources	(7.74, 7.91)	(7.86, 8.00)	(7.89, 8.05)	(7.97, 8.24)	(7.91, 8.06)	(8.03, 8.23)	(7.91, 8.22)	(7.83, 8.12)	(7.73, 8.09)	<.001	(-0.12, 0.29)

Abbreviation: NHANES, National Health and Nutrition Examination Survey.

^a The means were survey-weighted and adjusted for energy to 2000 kcal/d using the residual method.

eTable 7. Trends in Estimated Percent Energy (%E) From High- and Low-Quality Carbohydrate by Age Group, Sex, Race/Ethnicity, Education, and Income, 1999-2016

Estimated Percent Energy, %	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
High-quality carbohydrate											
Age group, y											
20-34	5.56 (5.27, 5.84)	5.90 (5.65, 6.14)	5.70 (5.28, 6.11)	6.06 (5.76, 6.36)	6.29 (5.95, 6.64)	6.70 (6.41, 6.99)	6.94 (6.68, 7.20)	6.70 (6.48, 6.91)	7.19 (6.76, 7.62)	<.001	1.64 (1.12, 2.15)
35-49	6.90 (6.66, 7.14)	6.91 (6.72, 7.09)	6.85 (6.48, 7.23)	7.26 (6.88, 7.64)	7.29 (6.84, 7.73)	7.94 (7.58, 8.30)	8.08 (7.59, 8.57)	8.08 (7.85, 8.31)	8.07 (7.70, 8.44)	<.001	1.17 (0.74, 1.61)
50-64	8.52 (8.02, 9.02)	8.55 (8.21, 8.89)	8.34 (7.94, 8.74)	8.63 (8.09, 9.17)	9.19 (8.69, 9.68)	9.34 (8.97, 9.72)	9.45 (9.15, 9.74)	9.08 (8.77, 9.39)	9.12 (8.81, 9.43)	<.001	0.60 (0.01, 1.19)
≥65	10.2 (9.86, 10.5)	10.2 (9.89, 10.4)	10.3 (10.0, 10.6)	10.6 (10.2, 10.9)	10.8 (10.4, 11.3)	10.9 (10.5, 11.3)	11.2 (10.8, 11.6)	11.0 (10.5, 11.4)	10.7 (10.4, 10.9)	<.001	0.51 (0.10, 0.92)
P for interaction					.005						
Sex											
Male	6.67 (6.41, 6.93)	6.81 (6.62, 6.99)	6.78 (6.49, 7.07)	6.96 (6.66, 7.26)	7.27 (6.89, 7.64)	7.61 (7.34, 7.87)	7.92 (7.71, 8.13)	7.71 (7.52, 7.90)	7.93 (7.63, 8.24)	<.001	1.26 (0.86, 1.66)
Female	8.11 (7.78, 8.44)	8.24 (8.01, 8.47)	8.12 (7.75, 8.50)	8.67 (8.36, 8.99)	8.81 (8.42, 9.20)	9.27 (9.09, 9.45)	9.44 (9.08, 9.80)	9.25 (9.03, 9.47)	9.32 (8.99, 9.64)	<.001	1.21 (0.74, 1.67)
P for interaction					.51						
Race/ethnicity											
Non-Hispanic white	7.12 (6.86, 7.38)	7.39 (7.18, 7.59)	7.33 (7.02, 7.65)	7.80 (7.54, 8.06)	7.88 (7.39, 8.36)	8.33 (8.11, 8.55)	8.52 (8.26, 8.78)	8.15 (7.91, 8.40)	8.32 (7.97, 8.68)	<.001	1.21 (0.77, 1.64)
Non-Hispanic black	7.15 (6.85, 7.45)	6.95 (6.71, 7.19)	6.76 (6.44, 7.09)	7.09 (6.52, 7.66)	7.27 (7.07, 7.46)	7.54 (7.17, 7.92)	7.59 (7.04, 8.15)	7.70 (7.38, 8.02)	7.76 (7.39, 8.13)	<.001	0.61 (0.13, 1.09)
Hispanic	8.54 (8.16, 8.91)	8.24 (7.89, 8.58)	8.33 (7.94, 8.72)	8.27 (7.99, 8.56)	8.83 (8.59, 9.06)	8.83 (8.57, 9.10)	9.07 (8.77, 9.37)	9.18 (8.84, 9.52)	9.20 (8.93, 9.46)	<.001	0.66 (0.20, 1.12)
Other	9.13 (8.14, 10.1)	9.91 (8.92, 10.9)	9.37 (8.38, 10.4)	9.38 (8.69, 10.1)	10.7 (9.94, 11.5)	10.8 (10.2, 11.5)	11.2 (10.6, 11.8)	11.2 (10.5, 11.9)	11.0 (10.4, 11.6)	<.001	1.89 (0.74, 3.04)
P for interaction					.004						

Estimated Percent	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014		
Education level											
<High school graduate	7.77	7.62	7.82	7.99	7.94	8.26	8.36	8.22	8.66	.002	0.90
	(7.39, 8.14)	(7.19, 8.05)	(7.40, 8.25)	(7.55, 8.43)	(7.52, 8.37)	(7.84, 8.69)	(7.97, 8.75)	(7.83, 8.61)	(8.36, 8.97)		(0.41, 1.38)
High school graduate or GED	7.23	7.19	7.03	7.41	7.65	7.57	8.21	7.76	7.78	<.001	0.55
	(6.85, 7.61)	(6.93, 7.44)	(6.62, 7.44)	(7.11, 7.70)	(7.28, 8.03)	(7.30, 7.84)	(7.87, 8.56)	(7.40, 8.11)	(7.37, 8.19)		(-0.01, 1.11)
Some college or above	7.35	7.68	7.57	8.00	8.35	8.88	8.94	8.83	8.93	<.001	1.57
	(7.05, 7.66)	(7.48, 7.88)	(7.29, 7.86)	(7.69, 8.31)	(7.95, 8.74)	(8.71, 9.04)	(8.66, 9.21)	(8.61, 9.06)	(8.62, 9.24)		(1.14, 2.01)
P for interaction											<.001
Ratio of family income to poverty level											
<1.30	7.38	7.31	7.06	7.58	7.44	7.72	7.85	7.79	8.19	.03	0.81
	(6.94, 7.82)	(6.89, 7.72)	(6.51, 7.61)	(7.18, 7.98)	(6.94, 7.94)	(7.51, 7.94)	(7.32, 8.37)	(7.48, 8.10)	(7.77, 8.61)		(0.20, 1.42)
1.30-3.49	7.29	7.47	7.58	7.77	8.14	8.29	8.61	8.40	8.23	<.001	0.94
	(6.99, 7.58)	(7.22, 7.72)	(7.18, 7.98)	(7.47, 8.06)	(7.81, 8.46)	(8.06, 8.53)	(8.34, 8.87)	(8.11, 8.69)	(7.91, 8.55)		(0.50, 1.38)
≥3.50	7.42	7.65	7.64	7.97	8.22	8.85	9.26	9.00	9.04	<.001	1.61
	(7.08, 7.77)	(7.45, 7.86)	(7.40, 7.89)	(7.60, 8.34)	(7.77, 8.68)	(8.50, 9.20)	(8.91, 9.61)	(8.74, 9.26)	(8.71, 9.36)		(1.14, 2.09)
P for interaction											<.001
Low-quality carbohydrate											
Age group, y											
20-34	47.6	47.5	46.7	46.1	46.3	46.0	45.2	44.7	43.4	<.001	-4.14
	(47.1, 48.0)	(47.1, 47.9)	(46.2, 47.2)	(45.7, 46.5)	(45.9, 46.7)	(45.6, 46.4)	(44.7, 45.6)	(44.3, 45.1)	(42.7, 44.1)		(-4.98, -3.30)
35-49	45.2	45.3	45.2	43.9	44.1	43.8	43.6	43.1	42.6	<.001	-2.62
	(44.7, 45.7)	(44.9, 45.7)	(44.7, 45.7)	(43.3, 44.5)	(43.5, 44.8)	(43.5, 44.1)	(42.8, 44.4)	(42.8, 43.3)	(42.0, 43.1)		(-3.35, -1.89)
50-64	43.5	43.6	42.5	42.6	41.9	42.0	41.9	41.5	41.0	<.001	-2.43
	(43.1, 43.8)	(43.3, 44.0)	(42.0, 43.0)	(41.9, 43.2)	(41.5, 42.4)	(41.6, 42.4)	(41.5, 42.3)	(41.0, 42.1)	(40.3, 41.8)		(-3.24, -1.62)
≥65	42.5	42.4	42.0	41.7	41.4	41.1	40.8	40.3	39.8	<.001	-2.75
	(42.2, 42.9)	(42.1, 42.8)	(41.4, 42.6)	(41.4, 42.0)	(41.1, 41.7)	(40.8, 41.5)	(40.3, 41.2)	(39.9, 40.7)	(39.3, 40.3)		(-3.41, -2.09)
P for interaction											<.001

Estimated Percent Energy, %	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Sex											
Male	45.0 (44.7, 45.2)	45.0 (44.7, 45.4)	44.4 (44.0, 44.7)	44.1 (43.6, 44.5)	43.7 (43.3, 44.2)	43.4 (43.1, 43.8)	43.0 (42.7, 43.4)	42.7 (42.4, 43.0)	42.0 (41.5, 42.5)	<.001	-3.00 (-3.55, -2.45)
Female	45.1 (44.8, 45.5)	45.0 (44.7, 45.4)	44.5 (44.0, 45.0)	43.6 (43.1, 44.0)	43.7 (43.3, 44.2)	43.5 (43.3, 43.8)	43.1 (42.7, 43.5)	42.5 (42.1, 42.9)	41.7 (41.1, 42.3)	<.001	-3.48 (-4.15, -2.80)
P for interaction					.36						
Race/ethnicity											
Non-Hispanic white	44.9 (44.6, 45.2)	44.8 (44.5, 45.1)	44.1 (43.6, 44.5)	43.3 (42.8, 43.7)	43.5 (42.9, 44.1)	43.0 (42.7, 43.4)	42.8 (42.4, 43.1)	42.3 (41.9, 42.7)	41.5 (40.9, 42.0)	<.001	-3.41 (-4.03, -2.80)
Non-Hispanic black	46.4 (46.0, 46.7)	46.5 (46.1, 46.9)	45.9 (45.2, 46.6)	45.8 (45.1, 46.4)	45.1 (44.8, 45.3)	45.1 (44.7, 45.4)	44.6 (44.1, 45.1)	44.2 (43.7, 44.7)	43.5 (43.0, 44.0)	<.001	-2.85 (-3.47, -2.23)
Hispanic	45.0 (44.5, 45.5)	45.1 (44.6, 45.7)	45.6 (45.1, 46.0)	45.2 (44.6, 45.9)	44.3 (44.0, 44.7)	44.9 (44.5, 45.3)	43.6 (43.0, 44.1)	43.3 (42.8, 43.7)	42.8 (42.3, 43.4)	<.001	-2.14 (-2.88, -1.39)
Other	45.2 (44.5, 45.9)	45.2 (44.2, 46.3)	43.8 (43.2, 44.5)	43.7 (42.8, 44.5)	42.6 (41.6, 43.6)	42.6 (41.9, 43.3)	42.5 (41.8, 43.3)	41.4 (40.7, 42.0)	40.7 (40.1, 41.2)	<.001	-4.55 (-5.43, -3.66)
P for interaction					<.001						
Education level											
<High school graduate	45.0 (44.6, 45.4)	45.3 (44.9, 45.6)	45.2 (44.8, 45.6)	44.7 (44.3, 45.1)	44.2 (43.9, 44.6)	44.5 (44.1, 45.0)	44.2 (43.8, 44.5)	43.9 (43.4, 44.5)	43.4 (43.0, 43.9)	<.001	-1.62 (-2.22, -1.02)
High school graduate or GED	45.1 (44.7, 45.5)	45.2 (44.8, 45.6)	44.8 (44.1, 45.4)	44.6 (44.2, 45.1)	44.4 (43.9, 44.9)	44.6 (44.2, 45.0)	43.6 (43.1, 44.1)	43.6 (43.2, 43.9)	43.0 (42.4, 43.7)	<.001	-2.06 (-2.84, -1.29)
Some college or above	45.1 (44.7, 45.5)	44.9 (44.6, 45.2)	44.0 (43.6, 44.5)	43.2 (42.6, 43.7)	43.2 (42.8, 43.6)	42.7 (42.5, 43.0)	42.6 (42.2, 43.0)	41.9 (41.5, 42.4)	41.1 (40.6, 41.6)	<.001	-3.99 (-4.64, -3.34)
P for interaction					<.001						
Ratio of family income to poverty level											
<1.30	45.9 (45.4, 46.4)	45.7 (45.4, 46.0)	45.9 (45.4, 46.4)	45.3 (44.7, 46.0)	45.3 (44.7, 46.0)	45.3 (45.0, 45.6)	44.7 (44.1, 45.2)	44.5 (44.1, 44.9)	43.4 (43.1, 43.8)	<.001	-2.46 (-3.11, -1.82)
1.30-3.49	45.4 (45.1, 45.8)	45.4 (45.0, 45.7)	44.5 (44.2, 44.9)	44.3 (43.8, 44.8)	43.7 (43.4, 44.0)	43.9 (43.5, 44.4)	43.3 (42.7, 43.8)	42.7 (42.4, 43.0)	42.4 (41.9, 42.8)	<.001	-3.09 (-3.68, -2.50)

Estimated Percent Energy, %	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
≥3.50	44.5 (44.1, 44.8)	44.5 (44.1, 45.0)	43.5 (43.0, 44.0)	42.8 (42.4, 43.2)	43.0 (42.4, 43.7)	42.1 (41.8, 42.5)	41.9 (41.5, 42.2)	41.4 (40.9, 41.8)	40.6 (39.9, 41.3)	<.001	-3.89 (-4.67, -3.11)
P for interaction					<.001						

Abbreviation: GED, general equivalency diploma; NHANES, National Health and Nutrition Examination Survey.

P for interaction was calculated with the survey-weighted Wald F test for an interaction term between 2-year survey cycle and demographic subgroups and statistical significance was set at a two-tailed P<.001.

eTable 8. Trends in Estimated Percent Energy (%E) From Animal and Plant Protein by Age Group, Sex, Race/Ethnicity, Education, and Income, 1999-2016

Estimated Percent Energy, %	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Animal protein											
Age group, y											
20-34	10.1 (10.0, 10.2)	10.1 (9.96, 10.3)	10.4 (10.1, 10.6)	10.6 (10.4, 10.8)	10.6 (10.5, 10.8)	10.6 (10.4, 10.7)	10.5 (10.4, 10.6)	10.8 (10.7, 10.9)	10.9 (10.7, 11.0)	<.001	0.75 (0.56, 0.94)
35-49	10.2 (10.0, 10.4)	10.1 (10.0, 10.2)	10.1 (9.94, 10.2)	10.5 (10.4, 10.7)	10.5 (10.4, 10.6)	10.5 (10.4, 10.6)	10.4 (10.2, 10.6)	10.6 (10.5, 10.7)	10.7 (10.5, 10.8)	<.001	0.44 (0.20, 0.68)
50-64	10.2 (10.1, 10.3)	10.1 (10.1, 10.2)	10.4 (10.3, 10.5)	10.4 (10.3, 10.6)	10.4 (10.3, 10.5)	10.3 (10.1, 10.5)	10.2 (10.1, 10.3)	10.5 (10.3, 10.6)	10.5 (10.3, 10.6)	<.001	0.30 (0.11, 0.49)
≥65	10.1 (10.0, 10.2)	10.0 (9.90, 10.2)	10.2 (10.0, 10.3)	10.1 (10.0, 10.3)	10.3 (10.2, 10.4)	10.3 (10.2, 10.4)	10.3 (10.2, 10.3)	10.3 (10.2, 10.4)	10.3 (10.1, 10.5)	.005	0.20 (0.00, 0.41)
P for interaction	<.001										
Sex											
Male	10.5 (10.4, 10.6)	10.4 (10.3, 10.5)	10.6 (10.4, 10.7)	10.7 (10.6, 10.8)	10.8 (10.7, 10.9)	10.8 (10.6, 10.9)	10.7 (10.6, 10.8)	10.9 (10.8, 11.0)	10.9 (10.8, 11.0)	<.001	0.43 (0.28, 0.58)
Female	9.88 (9.79, 9.97)	9.82 (9.73, 9.91)	9.98 (9.85, 10.1)	10.3 (10.2, 10.3)	10.2 (10.1, 10.3)	10.1 (10.0, 10.3)	10.0 (9.94, 10.1)	10.3 (10.2, 10.4)	10.3 (10.2, 10.4)	<.001	0.44 (0.30, 0.57)
P for interaction	.92										
Race/ethnicity											
Non-Hispanic white	10.1 (10.0, 10.1)	10.0 (9.96, 10.1)	10.2 (10.1, 10.3)	10.4 (10.3, 10.5)	10.4 (10.3, 10.5)	10.4 (10.2, 10.5)	10.2 (10.1, 10.4)	10.5 (10.4, 10.6)	10.5 (10.4, 10.6)	<.001	0.45 (0.32, 0.58)
Non-Hispanic black	10.2 (10.1, 10.3)	10.0 (9.90, 10.1)	10.3 (10.1, 10.6)	10.4 (10.2, 10.5)	10.5 (10.4, 10.5)	10.4 (10.3, 10.6)	10.3 (10.3, 10.4)	10.4 (10.3, 10.5)	10.6 (10.5, 10.7)	.001	0.40 (0.21, 0.59)
Hispanic	10.5 (10.3, 10.6)	10.5 (10.3, 10.6)	10.5 (10.3, 10.7)	10.7 (10.5, 10.8)	10.8 (10.7, 10.9)	10.7 (10.5, 10.8)	10.7 (10.6, 10.8)	10.7 (10.6, 10.9)	10.7 (10.6, 10.9)	<.001	0.28 (0.06, 0.50)
Other	10.8 (10.5, 11.1)	10.5 (10.3, 10.7)	10.8 (10.5, 11.1)	10.8 (10.6, 11.0)	11.0 (10.7, 11.2)	10.9 (10.6, 11.2)	10.7 (10.5, 10.8)	10.9 (10.7, 11.1)	11.0 (10.8, 11.2)	.02	0.26

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
											(-0.09, 0.61)
P for interaction	.09										
Education level											
<High school graduate	10.4 (10.3, 10.5)	10.3 (10.2, 10.4)	10.5 (10.3, 10.6)	10.5 (10.4, 10.7)	10.7 (10.6, 10.8)	10.6 (10.5, 10.7)	10.5 (10.3, 10.6)	10.5 (10.4, 10.7)	10.7 (10.6, 10.8)	<.001	0.28 (0.14, 0.43)
High school graduate or GED	10.1 (10.0, 10.2)	10.1 (9.93, 10.2)	10.1 (9.95, 10.3)	10.3 (10.2, 10.4)	10.4 (10.3, 10.6)	10.4 (10.3, 10.5)	10.5 (10.3, 10.6)	10.6 (10.5, 10.7)	10.6 (10.4, 10.8)	<.001	0.47 (0.24, 0.71)
Some college or above	10.1 (10.00, 10.2)	10.1 (9.99, 10.2)	10.3 (10.1, 10.4)	10.5 (10.4, 10.6)	10.4 (10.3, 10.5)	10.4 (10.3, 10.6)	10.3 (10.2, 10.4)	10.6 (10.5, 10.6)	10.6 (10.5, 10.7)	<.001	0.51 (0.39, 0.63)
P for interaction	.004										
Ratio of family income to poverty level											
<1.30	10.2 (10.0, 10.3)	10.2 (10.1, 10.3)	10.1 (9.94, 10.3)	10.4 (10.2, 10.6)	10.5 (10.4, 10.6)	10.5 (10.4, 10.6)	10.4 (10.3, 10.5)	10.6 (10.4, 10.7)	10.7 (10.6, 10.8)	<.001	0.54 (0.35, 0.74)
1.30-3.49	10.1 (10.0, 10.2)	10.1 (10.0, 10.2)	10.3 (10.1, 10.4)	10.4 (10.3, 10.5)	10.5 (10.4, 10.6)	10.4 (10.2, 10.6)	10.3 (10.1, 10.4)	10.5 (10.4, 10.7)	10.5 (10.4, 10.6)	<.001	0.41 (0.27, 0.55)
≥3.50	10.2 (10.1, 10.3)	10.1 (9.97, 10.2)	10.3 (10.2, 10.5)	10.5 (10.4, 10.6)	10.4 (10.2, 10.5)	10.5 (10.4, 10.6)	10.3 (10.2, 10.5)	10.6 (10.5, 10.7)	10.6 (10.4, 10.8)	<.001	0.41 (0.21, 0.61)
P for interaction	.05										
Plant protein											
Age group, y											
20-34	5.08 (4.99, 5.16)	5.14 (5.07, 5.21)	5.21 (5.08, 5.33)	5.30 (5.22, 5.37)	5.33 (5.24, 5.41)	5.38 (5.32, 5.45)	5.49 (5.40, 5.58)	5.46 (5.38, 5.54)	5.59 (5.45, 5.73)	<.001	0.51 (0.35, 0.68)
35-49	5.32 (5.25, 5.39)	5.39 (5.34, 5.43)	5.39 (5.31, 5.47)	5.53 (5.46, 5.59)	5.50 (5.42, 5.59)	5.65 (5.60, 5.71)	5.66 (5.55, 5.77)	5.73 (5.68, 5.78)	5.70 (5.61, 5.79)	<.001	0.38 (0.26, 0.50)
50-64	5.55 (5.46, 5.65)	5.62 (5.53, 5.71)	5.73 (5.64, 5.82)	5.71 (5.63, 5.78)	5.74 (5.65, 5.84)	5.84 (5.78, 5.91)	5.90 (5.83, 5.97)	5.83 (5.74, 5.91)	5.83 (5.68, 5.98)	<.001	0.28 (0.10, 0.45)

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
≥65	5.76 (5.70, 5.82)	5.85 (5.79, 5.90)	5.83 (5.79, 5.88)	5.89 (5.84, 5.94)	5.91 (5.85, 5.98)	5.94 (5.89, 5.99)	6.01 (5.95, 6.07)	6.00 (5.93, 6.07)	5.97 (5.90, 6.03)	<.001	0.21 (0.12, 0.29)
P for interaction	.002										
Sex											
Male	5.32 (5.28, 5.37)	5.36 (5.30, 5.42)	5.46 (5.39, 5.53)	5.46 (5.39, 5.53)	5.51 (5.44, 5.58)	5.62 (5.57, 5.66)	5.67 (5.62, 5.73)	5.69 (5.64, 5.74)	5.70 (5.60, 5.81)	<.001	0.38 (0.27, 0.50)
Female	5.42 (5.34, 5.50)	5.53 (5.47, 5.60)	5.53 (5.44, 5.62)	5.67 (5.63, 5.72)	5.65 (5.59, 5.72)	5.73 (5.70, 5.76)	5.81 (5.75, 5.87)	5.77 (5.71, 5.82)	5.81 (5.72, 5.90)	<.001	0.39 (0.26, 0.51)
P for interaction	.97										
Race/ethnicity											
Non-Hispanic white	5.34 (5.27, 5.41)	5.43 (5.38, 5.48)	5.51 (5.43, 5.59)	5.58 (5.54, 5.62)	5.57 (5.49, 5.65)	5.67 (5.63, 5.71)	5.72 (5.66, 5.77)	5.69 (5.62, 5.75)	5.73 (5.64, 5.83)	<.001	0.40 (0.28, 0.52)
Non-Hispanic black	5.21 (5.14, 5.28)	5.23 (5.20, 5.27)	5.15 (5.06, 5.23)	5.22 (5.09, 5.35)	5.26 (5.20, 5.33)	5.33 (5.26, 5.39)	5.41 (5.32, 5.51)	5.41 (5.35, 5.47)	5.39 (5.30, 5.48)	<.001	0.18 (0.07, 0.29)
Hispanic	5.57 (5.50, 5.63)	5.56 (5.49, 5.64)	5.55 (5.48, 5.62)	5.63 (5.58, 5.68)	5.69 (5.63, 5.75)	5.74 (5.68, 5.80)	5.83 (5.76, 5.90)	5.84 (5.72, 5.96)	5.79 (5.72, 5.85)	<.001	0.22 (0.13, 0.31)
Other	5.71 (5.52, 5.90)	6.03 (5.66, 6.40)	5.98 (5.80, 6.16)	6.03 (5.80, 6.27)	6.19 (6.03, 6.35)	6.24 (5.98, 6.50)	6.29 (6.18, 6.40)	6.33 (6.17, 6.48)	6.31 (6.15, 6.47)	<.001	0.60 (0.35, 0.85)
P for interaction	<.001										
Education level											
<High school graduate	5.44 (5.36, 5.51)	5.44 (5.35, 5.52)	5.48 (5.41, 5.55)	5.50 (5.41, 5.59)	5.59 (5.49, 5.68)	5.64 (5.57, 5.71)	5.63 (5.53, 5.72)	5.61 (5.52, 5.71)	5.64 (5.53, 5.75)	<.001	0.20 (0.07, 0.33)
High school graduate or GED	5.29 (5.20, 5.38)	5.37 (5.28, 5.46)	5.36 (5.27, 5.45)	5.48 (5.40, 5.56)	5.45 (5.36, 5.53)	5.49 (5.44, 5.54)	5.59 (5.51, 5.68)	5.58 (5.50, 5.65)	5.55 (5.46, 5.64)	<.001	0.26 (0.14, 0.39)
Some college or above	5.39 (5.33, 5.45)	5.49 (5.45, 5.54)	5.56 (5.49, 5.64)	5.64 (5.57, 5.70)	5.65 (5.59, 5.71)	5.76 (5.71, 5.80)	5.82 (5.76, 5.87)	5.81 (5.76, 5.86)	5.85 (5.76, 5.95)	<.001	0.46 (0.35, 0.57)
P for interaction	<.001										

Estimated Percent Energy, %	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Ratio of family income to poverty level											
<1.30	5.34 (5.25, 5.43)	5.38 (5.29, 5.48)	5.37 (5.27, 5.47)	5.40 (5.29, 5.50)	5.47 (5.35, 5.60)	5.51 (5.45, 5.57)	5.56 (5.46, 5.65)	5.51 (5.43, 5.58)	5.61 (5.46, 5.77)	.002	0.27 (0.10, 0.45)
1.30-3.49	5.32 (5.25, 5.39)	5.40 (5.35, 5.45)	5.48 (5.41, 5.56)	5.54 (5.47, 5.61)	5.58 (5.53, 5.63)	5.63 (5.59, 5.67)	5.73 (5.67, 5.78)	5.68 (5.60, 5.77)	5.68 (5.60, 5.77)	<.001	0.36 (0.25, 0.47)
≥3.50	5.42 (5.35, 5.50)	5.49 (5.44, 5.54)	5.58 (5.50, 5.65)	5.66 (5.59, 5.73)	5.62 (5.53, 5.70)	5.80 (5.75, 5.85)	5.88 (5.81, 5.95)	5.90 (5.84, 5.95)	5.89 (5.78, 6.00)	<.001	0.47 (0.33, 0.60)
P for interaction	<.001										

Abbreviation: GED, general equivalency diploma; NHANES, National Health and Nutrition Examination Survey.

P for interaction was calculated with the survey-weighted Wald F test for an interaction term between 2-year survey cycle and demographic subgroups and statistical significance was set at a two-tailed P<.001.

eTable 9. Trends in Estimated Percent Energy (%E) From Saturated Fatty Acids, Monounsaturated Fatty Acids, and Polyunsaturated Fatty Acids by Age Group, Sex, Race/Ethnicity, Education, and Income, 1999-2016

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Saturated fatty acids											
Age group, y											
20-34	11.5 (11.4, 11.6)	11.5 (11.3, 11.6)	11.6 (11.4, 11.9)	11.7 (11.5, 11.9)	11.4 (11.2, 11.6)	11.3 (11.1, 11.4)	11.4 (11.2, 11.6)	11.7 (11.6, 11.9)	11.9 (11.7, 12.0)	<.001	0.33 (0.15, 0.51)
35-49	11.7 (11.6, 11.8)	11.6 (11.5, 11.8)	11.7 (11.5, 12.0)	11.9 (11.7, 12.1)	11.8 (11.6, 12.0)	11.5 (11.4, 11.7)	11.5 (11.3, 11.6)	11.6 (11.4, 11.7)	11.8 (11.6, 12.0)	.005	0.10 (-0.16, 0.35)
50-64	11.5 (11.3, 11.7)	11.4 (11.2, 11.6)	11.8 (11.6, 12.0)	11.8 (11.6, 12.0)	11.6 (11.4, 11.8)	11.6 (11.4, 11.8)	11.5 (11.3, 11.6)	11.7 (11.5, 11.9)	11.9 (11.7, 12.1)	.002	0.38 (0.10, 0.66)
≥65	11.1 (11.0, 11.3)	11.1 (11.0, 11.2)	11.2 (11.0, 11.4)	11.4 (11.2, 11.5)	11.2 (11.1, 11.4)	11.3 (11.2, 11.4)	11.1 (10.9, 11.3)	11.5 (11.4, 11.7)	11.9 (11.8, 12.1)	<.001	0.77 (0.58, 0.97)
P for interaction	<.001										
Sex											
Male	11.7 (11.6, 11.8)	11.7 (11.6, 11.8)	11.8 (11.7, 12.0)	11.9 (11.8, 12.0)	11.8 (11.6, 11.9)	11.7 (11.5, 11.9)	11.6 (11.5, 11.8)	11.8 (11.7, 12.0)	12.0 (11.9, 12.2)	<.001	0.30 (0.15, 0.46)
Female	11.3 (11.2, 11.4)	11.2 (11.1, 11.3)	11.4 (11.2, 11.6)	11.5 (11.4, 11.7)	11.4 (11.2, 11.5)	11.2 (11.1, 11.3)	11.2 (11.0, 11.3)	11.5 (11.3, 11.6)	11.7 (11.6, 11.8)	<.001	0.40 (0.20, 0.60)
P for interaction	.88										
Race/ethnicity											
Non-Hispanic white	11.9 (11.8, 12.0)	11.7 (11.6, 11.8)	11.9 (11.8, 12.1)	12.0 (11.9, 12.2)	11.9 (11.8, 12.0)	11.8 (11.7, 11.9)	11.7 (11.6, 11.9)	12.0 (11.9, 12.1)	12.3 (12.2, 12.4)	<.001	0.45 (0.32, 0.59)
Non-Hispanic black	11.0 (10.9, 11.1)	11.0 (10.8, 11.1)	11.2 (11.0, 11.4)	11.2 (11.0, 11.4)	11.2 (11.1, 11.3)	11.1 (11.0, 11.3)	11.1 (11.0, 11.3)	11.3 (11.1, 11.5)	11.4 (11.3, 11.6)	.001	0.44 (0.22, 0.65)
Hispanic	10.7 (10.5, 10.9)	10.8 (10.6, 11.0)	10.6 (10.4, 10.8)	10.6 (10.5, 10.8)	10.7 (10.5, 10.8)	10.5 (10.4, 10.6)	10.8 (10.6, 11.0)	10.9 (10.8, 11.1)	11.1 (11.0, 11.2)	<.001	0.38 (0.15, 0.61)
Other	9.96 (9.46, 10.5)	9.76 (9.33, 10.2)	10.2 (9.83, 10.6)	10.6 (10.2, 10.9)	10.1 (9.75, 10.4)	10.1 (9.80, 10.4)	9.84 (9.68, 10.0)	10.3 (10.1, 10.5)	10.6 (10.3, 10.8)	<.001	0.60 (0.03, 1.16)

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
P for interaction	.01										
Education level											
<High school graduate	11.2 (11.1, 11.4)	11.2 (11.0, 11.4)	11.1 (10.9, 11.3)	11.3 (11.1, 11.5)	11.3 (11.0, 11.6)	11.1 (10.8, 11.3)	11.0 (10.8, 11.2)	11.3 (11.2, 11.5)	11.4 (11.2, 11.6)	.14	0.16 (-0.10, 0.43)
High school graduate or GED	11.7 (11.6, 11.8)	11.6 (11.5, 11.7)	11.9 (11.7, 12.0)	11.7 (11.5, 11.8)	11.5 (11.4, 11.7)	11.5 (11.4, 11.7)	11.4 (11.2, 11.6)	11.7 (11.5, 11.9)	11.9 (11.6, 12.2)	.008	0.22 (-0.07, 0.50)
Some college or above	11.6 (11.5, 11.7)	11.4 (11.3, 11.6)	11.7 (11.5, 11.9)	11.9 (11.7, 12.0)	11.7 (11.5, 11.8)	11.5 (11.4, 11.7)	11.5 (11.4, 11.6)	11.7 (11.6, 11.8)	12.0 (11.9, 12.0)	<.001	0.40 (0.27, 0.53)
P for interaction	.002										
Ratio of family income to poverty level											
<1.30	11.1 (11.0, 11.3)	11.2 (11.0, 11.4)	11.3 (11.1, 11.6)	11.4 (11.2, 11.5)	11.2 (10.9, 11.4)	11.1 (11.0, 11.3)	11.3 (11.1, 11.5)	11.4 (11.3, 11.5)	11.5 (11.2, 11.7)	.08	0.34 (0.07, 0.61)
1.30-3.49	11.5 (11.3, 11.7)	11.4 (11.3, 11.5)	11.5 (11.3, 11.7)	11.7 (11.4, 11.9)	11.6 (11.3, 11.8)	11.4 (11.3, 11.5)	11.4 (11.2, 11.5)	11.7 (11.5, 11.8)	12.0 (11.8, 12.2)	<.001	0.48 (0.23, 0.73)
≥3.50	11.7 (11.6, 11.9)	11.6 (11.5, 11.7)	11.9 (11.7, 12.0)	11.9 (11.8, 12.1)	11.8 (11.6, 11.9)	11.7 (11.5, 11.9)	11.5 (11.4, 11.7)	11.8 (11.6, 11.9)	12.0 (11.9, 12.1)	<.001	0.32 (0.15, 0.49)
P for interaction	.28										
Monounsaturated fatty acids											
Age group, y											
20-34	12.8 (12.6, 12.9)	12.7 (12.6, 12.8)	13.0 (12.8, 13.1)	12.8 (12.7, 13.0)	12.6 (12.5, 12.7)	12.5 (12.4, 12.6)	12.6 (12.5, 12.7)	12.7 (12.6, 12.8)	13.0 (12.8, 13.1)	<.001	0.20 (0.00, 0.41)
35-49	13.1 (12.9, 13.2)	13.0 (12.9, 13.2)	13.1 (12.9, 13.3)	13.1 (12.9, 13.3)	13.1 (12.9, 13.3)	12.7 (12.6, 12.9)	12.7 (12.6, 12.9)	12.8 (12.7, 12.9)	13.0 (12.8, 13.2)	<.001	-0.07 (-0.30, 0.16)
50-64	13.0 (12.8, 13.2)	12.9 (12.7, 13.0)	13.3 (13.1, 13.6)	13.1 (12.9, 13.3)	13.1 (12.9, 13.3)	12.9 (12.7, 13.1)	12.9 (12.7, 13.0)	13.0 (12.8, 13.2)	13.3 (13.0, 13.5)	.03	0.29 (-0.07, 0.64)
≥65	12.6 (12.5, 12.8)	12.6 (12.5, 12.7)	12.7 (12.5, 12.9)	12.6 (12.5, 12.7)	12.6 (12.4, 12.8)	12.6 (12.4, 12.7)	12.5 (12.4, 12.7)	12.8 (12.6, 12.9)	13.0 (12.9, 13.2)	.001	0.43 (0.19, 0.66)
P for interaction	.003										

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Sex											
Male	13.3 (13.1, 13.4)	13.2 (13.1, 13.3)	13.4 (13.2, 13.5)	13.3 (13.2, 13.4)	13.3 (13.2, 13.4)	13.1 (13.0, 13.2)	13.0 (12.9, 13.2)	13.1 (13.0, 13.2)	13.3 (13.2, 13.4)	.001	0.03 (-0.16, 0.22)
Female	12.5 (12.4, 12.6)	12.5 (12.4, 12.6)	12.7 (12.6, 12.9)	12.6 (12.5, 12.7)	12.5 (12.4, 12.6)	12.3 (12.2, 12.4)	12.3 (12.2, 12.5)	12.6 (12.4, 12.7)	12.9 (12.6, 13.1)	<.001	0.34 (0.10, 0.57)
P for interaction	.02										
Race/ethnicity											
Non-Hispanic white	13.1 (13.0, 13.2)	13.0 (12.9, 13.1)	13.2 (13.1, 13.4)	13.1 (13.0, 13.2)	13.1 (12.9, 13.2)	12.9 (12.8, 13.0)	12.9 (12.7, 13.0)	13.1 (13.0, 13.2)	13.3 (13.2, 13.5)	<.001	0.22 (0.04, 0.39)
Non-Hispanic black	12.6 (12.4, 12.7)	12.8 (12.6, 12.9)	13.0 (12.8, 13.2)	12.7 (12.5, 13.0)	12.9 (12.8, 13.0)	12.7 (12.6, 12.8)	12.7 (12.6, 12.9)	12.8 (12.6, 13.0)	13.0 (12.8, 13.1)	<.001	0.40 (0.21, 0.59)
Hispanic	12.3 (12.1, 12.5)	12.4 (12.2, 12.6)	12.2 (12.0, 12.5)	12.3 (12.0, 12.5)	12.2 (12.1, 12.4)	12.0 (11.9, 12.1)	12.3 (12.0, 12.5)	12.2 (12.1, 12.4)	12.4 (12.3, 12.6)	<.001	0.14 (-0.13, 0.40)
Other	11.9 (11.4, 12.3)	11.4 (10.8, 12.0)	12.2 (12.0, 12.5)	12.1 (11.7, 12.5)	11.9 (11.6, 12.1)	11.8 (11.5, 12.0)	11.7 (11.5, 11.9)	12.0 (11.9, 12.2)	12.4 (12.1, 12.7)	<.001	0.57 (0.01, 1.13)
P for interaction	.02										
Education level											
<High school graduate	12.7 (12.5, 12.9)	12.6 (12.5, 12.8)	12.5 (12.3, 12.8)	12.6 (12.4, 12.7)	12.7 (12.5, 12.9)	12.3 (12.2, 12.5)	12.4 (12.3, 12.6)	12.4 (12.3, 12.6)	12.5 (12.3, 12.6)	.05	-0.21 (-0.44, 0.02)
High school graduate or GED	13.0 (12.8, 13.2)	13.0 (12.9, 13.1)	13.2 (13.1, 13.4)	12.9 (12.7, 13.0)	12.9 (12.7, 13.0)	12.7 (12.6, 12.9)	12.7 (12.5, 13.0)	12.8 (12.6, 12.9)	13.0 (12.8, 13.1)	<.001	-0.05 (-0.29, 0.19)
Some college or above	12.9 (12.8, 13.0)	12.8 (12.7, 13.0)	13.1 (12.9, 13.3)	13.1 (12.9, 13.2)	13.0 (12.8, 13.1)	12.8 (12.7, 12.9)	12.7 (12.6, 12.8)	12.9 (12.8, 13.0)	13.2 (13.1, 13.4)	<.001	0.33 (0.12, 0.54)
P for interaction	<.001										
Ratio of family income to poverty level											
<1.30	12.6 (12.4, 12.7)	12.7 (12.5, 12.8)	12.7 (12.5, 13.0)	12.5 (12.4, 12.7)	12.5 (12.4, 12.7)	12.4 (12.3, 12.5)	12.4 (12.3, 12.5)	12.4 (12.3, 12.5)	12.6 (12.4, 12.8)	.001	0.01 (-0.23, 0.25)

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
1.30-3.49	12.8 (12.6, 13.0)	12.7 (12.6, 12.8)	13.0 (12.7, 13.2)	12.8 (12.6, 13.0)	12.8 (12.7, 13.0)	12.6 (12.5, 12.8)	12.7 (12.5, 12.9)	12.8 (12.7, 12.9)	13.1 (12.9, 13.2)	.01	0.22 (-0.02, 0.47)
≥3.50	13.1 (12.9, 13.2)	13.0 (12.9, 13.2)	13.3 (13.1, 13.5)	13.2 (13.1, 13.4)	13.1 (13.0, 13.3)	13.0 (12.8, 13.1)	12.9 (12.8, 13.0)	13.0 (12.9, 13.2)	13.4 (13.1, 13.7)	.004	0.32 (0.01, 0.62)
P for interaction	.40										
Polyunsaturated fatty acids											
Age group, y											
20-34	7.38 (7.28, 7.48)	7.21 (7.14, 7.29)	7.41 (7.33, 7.49)	7.42 (7.30, 7.53)	7.46 (7.36, 7.55)	7.57 (7.50, 7.65)	7.89 (7.83, 7.94)	7.93 (7.83, 8.03)	8.09 (8.01, 8.18)	<.001	0.71 (0.58, 0.84)
35-49	7.61 (7.52, 7.71)	7.63 (7.54, 7.73)	7.64 (7.51, 7.78)	7.79 (7.66, 7.93)	7.69 (7.60, 7.79)	7.82 (7.71, 7.92)	8.07 (7.93, 8.22)	8.16 (8.08, 8.23)	8.22 (8.08, 8.35)	<.001	0.60 (0.44, 0.77)
50-64	7.75 (7.65, 7.85)	7.76 (7.69, 7.84)	7.90 (7.74, 8.07)	7.82 (7.74, 7.91)	8.02 (7.93, 8.12)	7.97 (7.89, 8.05)	8.20 (8.08, 8.33)	8.35 (8.25, 8.46)	8.34 (8.20, 8.48)	<.001	0.59 (0.42, 0.76)
≥65	7.66 (7.56, 7.77)	7.83 (7.77, 7.89)	7.73 (7.61, 7.86)	7.69 (7.58, 7.81)	7.69 (7.56, 7.82)	7.89 (7.80, 7.97)	8.10 (7.97, 8.23)	8.19 (8.06, 8.31)	8.29 (8.18, 8.41)	<.001	0.63 (0.47, 0.79)
P for interaction	<.001										
Sex											
Male	7.53 (7.46, 7.60)	7.52 (7.47, 7.57)	7.62 (7.53, 7.70)	7.63 (7.52, 7.74)	7.68 (7.61, 7.75)	7.78 (7.71, 7.84)	8.02 (7.96, 8.09)	8.08 (7.98, 8.17)	8.12 (8.04, 8.20)	<.001	0.59 (0.48, 0.69)
Female	7.63 (7.55, 7.70)	7.63 (7.56, 7.71)	7.69 (7.59, 7.79)	7.72 (7.60, 7.84)	7.74 (7.69, 7.79)	7.82 (7.75, 7.89)	8.10 (8.00, 8.20)	8.23 (8.15, 8.31)	8.33 (8.22, 8.45)	<.001	0.71 (0.57, 0.84)
P for interaction	.53										
Race/ethnicity											
Non-Hispanic white	7.64 (7.58, 7.70)	7.63 (7.58, 7.67)	7.72 (7.64, 7.80)	7.76 (7.66, 7.85)	7.77 (7.71, 7.83)	7.89 (7.82, 7.96)	8.13 (8.04, 8.21)	8.26 (8.18, 8.34)	8.33 (8.23, 8.43)	<.001	0.69 (0.57, 0.81)
Non-Hispanic black	7.51 (7.39, 7.63)	7.61 (7.51, 7.72)	7.68 (7.56, 7.79)	7.66 (7.54, 7.78)	7.79 (7.70, 7.89)	7.82 (7.76, 7.88)	8.22 (8.15, 8.29)	8.14 (8.02, 8.26)	8.34 (8.23, 8.44)	<.001	0.82 (0.66, 0.99)

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
Estimated Percent Energy, %	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Hispanic	7.42 (7.32, 7.52)	7.40 (7.26, 7.53)	7.25 (7.15, 7.36)	7.27 (7.12, 7.43)	7.40 (7.30, 7.49)	7.43 (7.33, 7.52)	7.81 (7.72, 7.91)	7.84 (7.72, 7.96)	7.88 (7.75, 8.00)	<.001	0.46 (0.30, 0.62)
Other	7.37 (7.07, 7.66)	7.21 (6.97, 7.45)	7.52 (7.23, 7.81)	7.45 (7.28, 7.62)	7.56 (7.37, 7.75)	7.57 (7.38, 7.76)	7.75 (7.64, 7.86)	7.91 (7.77, 8.04)	8.00 (7.83, 8.16)	<.001	0.63 (0.30, 0.97)
P for interaction	.02										
Education level											
<High school graduate	7.49 (7.40, 7.57)	7.53 (7.45, 7.61)	7.40 (7.27, 7.54)	7.44 (7.33, 7.55)	7.56 (7.49, 7.63)	7.59 (7.49, 7.69)	7.93 (7.80, 8.06)	7.92 (7.77, 8.07)	7.78 (7.66, 7.89)	<.001	0.29 (0.15, 0.43)
High school graduate or GED	7.60 (7.51, 7.68)	7.56 (7.47, 7.64)	7.63 (7.49, 7.77)	7.63 (7.48, 7.79)	7.68 (7.62, 7.74)	7.71 (7.62, 7.80)	8.00 (7.90, 8.11)	8.03 (7.93, 8.13)	8.21 (8.12, 8.31)	<.001	0.62 (0.49, 0.74)
Some college or above	7.62 (7.52, 7.71)	7.61 (7.53, 7.68)	7.75 (7.63, 7.86)	7.77 (7.68, 7.86)	7.78 (7.72, 7.85)	7.90 (7.85, 7.96)	8.12 (8.03, 8.21)	8.25 (8.14, 8.36)	8.33 (8.24, 8.43)	<.001	0.71 (0.58, 0.85)
P for interaction	<.001										
Ratio of family income to poverty level											
<1.30	7.49 (7.41, 7.56)	7.53 (7.41, 7.64)	7.48 (7.34, 7.63)	7.39 (7.29, 7.49)	7.48 (7.40, 7.56)	7.51 (7.46, 7.57)	7.87 (7.80, 7.95)	7.86 (7.74, 7.98)	7.98 (7.86, 8.10)	<.001	0.49 (0.35, 0.63)
1.30-3.49	7.53 (7.42, 7.63)	7.53 (7.47, 7.59)	7.65 (7.55, 7.75)	7.51 (7.42, 7.61)	7.67 (7.60, 7.74)	7.74 (7.64, 7.84)	8.08 (7.99, 8.16)	8.17 (8.09, 8.25)	8.20 (8.10, 8.29)	<.001	0.67 (0.53, 0.82)
≥3.50	7.68 (7.59, 7.77)	7.63 (7.54, 7.71)	7.77 (7.64, 7.91)	7.93 (7.83, 8.03)	7.85 (7.75, 7.96)	8.04 (7.94, 8.13)	8.19 (8.10, 8.28)	8.31 (8.21, 8.40)	8.45 (8.28, 8.61)	<.001	0.76 (0.57, 0.95)
P for interaction	<.001										

Abbreviation: GED, general equivalency diploma; NHANES, National Health and Nutrition Examination Survey.

P for interaction was calculated with the survey-weighted Wald F test for an interaction term between 2-year survey cycle and demographic subgroups and statistical significance was set at a two-tailed P<.001.

eTable 10. Trends in Estimated Healthy Eating Index-2015 by Age Group, Sex, Race/Ethnicity, Education, and Income, 1999-2016

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Age group, y											
20-34	50.9 (49.8, 52.0)	51.8 (51.1, 52.6)	51.1 (49.8, 52.3)	52.5 (51.4, 53.5)	52.8 (52.0, 53.7)	53.6 (52.8, 54.5)	54.3 (53.7, 54.9)	53.5 (52.8, 54.2)	54.5 (53.4, 55.6)	<.001	3.59 (2.07, 5.12)
35-49	54.8 (53.9, 55.8)	55.0 (54.3, 55.6)	54.2 (53.3, 55.1)	55.4 (54.6, 56.3)	55.1 (53.9, 56.2)	56.5 (55.8, 57.3)	56.9 (55.8, 58.0)	56.9 (56.3, 57.6)	56.6 (55.8, 57.4)	<.001	1.77 (0.57, 2.98)
50-64	58.4 (57.3, 59.5)	58.8 (57.9, 59.6)	57.7 (56.9, 58.5)	58.4 (57.4, 59.4)	59.8 (58.5, 61.0)	59.8 (58.9, 60.6)	60.1 (59.4, 60.8)	59.6 (58.8, 60.4)	59.1 (58.2, 60.0)	<.001	0.69 (-0.71, 2.09)
≥65	62.0 (61.4, 62.6)	62.2 (61.5, 62.8)	61.3 (60.8, 61.8)	62.4 (61.8, 62.9)	62.6 (61.7, 63.5)	62.5 (61.9, 63.1)	63.2 (62.2, 64.1)	62.7 (61.9, 63.4)	61.5 (60.6, 62.3)	.004	-0.53 (-1.60, 0.54)
P for interaction											<.001
Sex											
Male	54.1 (53.3, 54.9)	54.6 (54.0, 55.1)	53.9 (53.2, 54.5)	54.7 (54.0, 55.4)	55.2 (54.4, 56.0)	55.7 (55.2, 56.3)	56.5 (56.0, 56.9)	55.9 (55.4, 56.4)	56.0 (55.2, 56.8)	<.001	1.90 (0.80, 3.00)
Female	57.1 (56.1, 58.2)	57.6 (57.0, 58.3)	56.7 (55.8, 57.7)	58.3 (57.6, 59.0)	58.4 (57.4, 59.4)	59.3 (58.9, 59.8)	59.8 (59.0, 60.6)	59.5 (59.0, 60.1)	59.3 (58.2, 60.3)	<.001	2.13 (0.66, 3.59)
P for interaction											.44
Race/ethnicity											
Non-Hispanic white	55.2 (54.1, 56.3)	55.9 (55.3, 56.5)	55.0 (54.2, 55.8)	56.5 (55.9, 57.1)	56.6 (55.4, 57.7)	57.5 (57.0, 58.1)	58.0 (57.3, 58.7)	57.5 (56.8, 58.1)	57.4 (56.5, 58.3)	<.001	2.20 (0.79, 3.61)
Non-Hispanic black	55.1 (54.2, 56.1)	55.3 (54.5, 56.2)	54.4 (53.6, 55.3)	55.4 (54.0, 56.8)	55.8 (55.3, 56.2)	56.0 (55.0, 56.9)	56.6 (55.3, 57.9)	56.6 (55.8, 57.3)	56.2 (55.1, 57.3)	.02	1.09 (-0.34, 2.52)
Hispanic	57.6 (56.6, 58.5)	57.2 (56.6, 57.7)	57.1 (56.0, 58.2)	57.3 (56.4, 58.1)	58.0 (57.5, 58.5)	57.9 (57.3, 58.5)	58.4 (57.7, 59.1)	58.3 (57.4, 59.3)	57.8 (57.0, 58.7)	.12	0.23 (-1.04, 1.50)
Other	58.4 (56.4, 60.4)	59.4 (57.5, 61.2)	58.7 (57.0, 60.5)	58.9 (57.8, 60.0)	61.0 (59.8, 62.3)	60.3 (59.1, 61.5)	61.6 (60.7, 62.6)	61.0 (59.6, 62.4)	61.2 (60.1, 62.3)	.002	2.83 (0.56, 5.10)
P for interaction											.07

	Survey-Weighted Mean (95% CI)									P for Trend	2015-2016 versus 1999-2000, Difference (95% CI)
	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	2013-2014	2015-2016		
Education level											
<High school graduate	56.2 (55.4, 57.0)	55.8 (54.8, 56.8)	55.6 (54.7, 56.4)	56.5 (55.4, 57.5)	56.1 (55.0, 57.2)	56.8 (56.0, 57.6)	57.0 (56.1, 57.9)	56.5 (55.5, 57.4)	56.6 (55.6, 57.6)	.34	0.37 (-0.89, 1.63)
High school graduate or GED	54.8 (53.8, 55.8)	55.0 (54.2, 55.8)	53.7 (52.8, 54.6)	55.0 (54.3, 55.8)	55.7 (54.7, 56.7)	55.4 (54.5, 56.3)	57.1 (56.4, 57.9)	55.6 (54.7, 56.4)	55.8 (55.0, 56.6)		<.001
Some college or above	55.9 (54.8, 57.0)	56.8 (56.3, 57.3)	56.1 (55.4, 56.8)	57.3 (56.7, 58.0)	57.8 (56.8, 58.7)	58.7 (58.3, 59.1)	58.8 (58.1, 59.5)	58.9 (58.3, 59.4)	58.6 (57.7, 59.4)	<.001	2.61 (1.24, 3.97)
P for interaction											.003
Ratio of family income to poverty level											
<1.30	55.4 (54.3, 56.5)	55.0 (54.0, 55.9)	53.9 (52.5, 55.2)	55.7 (54.7, 56.7)	55.3 (54.0, 56.6)	55.6 (55.0, 56.1)	56.0 (55.0, 56.9)	55.7 (55.0, 56.4)	56.2 (55.3, 57.2)	.24	0.81 (-0.63, 2.26)
1.30-3.49	55.1 (54.2, 55.9)	55.7 (55.1, 56.4)	55.6 (54.5, 56.6)	55.9 (55.2, 56.6)	56.8 (55.8, 57.7)	57.1 (56.4, 57.8)	57.7 (57.0, 58.4)	57.2 (56.6, 57.8)	56.4 (55.6, 57.1)		<.001
≥3.50	56.1 (54.9, 57.2)	56.9 (56.2, 57.6)	56.0 (55.3, 56.6)	57.4 (56.4, 58.3)	57.5 (56.5, 58.4)	58.8 (58.1, 59.5)	59.9 (58.9, 60.8)	59.5 (58.8, 60.2)	59.3 (58.3, 60.3)	<.001	3.23 (1.71, 4.75)
P for interaction											<.001

Abbreviation: GED, general equivalency diploma; NHANES, National Health and Nutrition Examination Survey.

P for interaction was calculated with the survey-weighted Wald F test for an interaction term between 2-year survey cycle and demographic subgroups and statistical significance was set at a two-tailed $P < .001$.

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