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Added Sugars: Food Pattern Modeling Exercise 2

2020 Dietary Guidelines Advisory Committee

Food Pattern Modeling Report

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The food pattern modeling exercises were conducted by the 2020 Dietary Guidelines Advisory Committee in collaboration with the food pattern modeling team at the Center for Nutrition Policy and Promotion, Food and Nutrition Service, U.S. Department of Agriculture (USDA). All Food Pattern Modeling reports from the 2020 Advisory Committee Project are available at: <https://www.dietaryguidelines.gov/2020-advisory-committee-report/food-pattern-modeling/FPM-added-sugars>.

The food pattern modeling analyses help explain how changes to food-based dietary recommendations could potentially affect Americans' ability to meet their nutrient needs. The exercises help inform USDA's development of relevant dietary patterns for the American population that reflect health-promoting patterns identified in systematic reviews and meet nutrient recommendations. The results should not be interpreted as dietary guidance. This report provides the documentation for Added Sugars Food Pattern Modeling Exercise 2 of 3. To view the results in the context of the 2020 Advisory Committee's Scientific Report visit: <https://www.dietaryguidelines.gov/2020-advisory-committee-report>.

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INTRODUCTION

This report describes the results of the *Added Sugars Food Pattern Modeling Exercise 2: Redistributing calories from top reported sources of added sugars to foods and beverages that achieve food group and nutrient goals*. This exercise was conducted by the 2020 Dietary Guidelines Advisory Committee, supported by USDA's food pattern modeling team, to help answer the following question:

- How much added sugars can be accommodated in a healthy diet while still meeting food group and nutrient needs?

The Added Sugars Food Pattern Modeling Exercises 1 and 3 provide additional information on this question. To access the results of these exercises, visit: <https://www.dietaryguidelines.gov/2020-advisory-committee-report/food-pattern-modeling/FPM-added-sugars>.

The food pattern modeling exercises were conducted by the 2020 Dietary Guidelines Advisory Committee with support from the food pattern modeling team. The food pattern modeling team included nutrition scientists and data analysts on the Nutrition and Economic Analysis Team at the USDA Center for Nutrition Policy and Promotion within the Food and Nutrition Service. To answer the food pattern modeling questions, the Committee, with support from Federal staff, developed a protocol, or plan, that described the food pattern exercises that would be used to answer the question. The protocol included an *analytic framework* that described the overall scope and the approach used to answer the question and an *analytic plan* that described the data and subsequent analyses to be considered.

More information about the 2020 Dietary Guidelines Advisory Committee is available at the following website: <https://www.DietaryGuidelines.gov>.

The Committee developed conclusion statements for each question answered using food pattern modeling. The conclusion statements describe the results of the analyses in order to answer the specific question examined. The conclusion statements are available in the 2020 Dietary Guidelines Advisory Committee's Scientific Report, available at: <https://www.dietaryguidelines.gov/2020-advisory-committee-report>.

METHODS

The Added Sugars Food Pattern Modeling Exercise 2 relied on data from the U.S. Department of Agriculture Food and Nutrient Database for Dietary Studies (FNDDS) 2015-2016. The Food Patterns Equivalents Database (FPED) 2015-2016 and the National Nutrient Database for Standard Reference, Release 28 (2016 version) provided supporting data. The U.S. population ages 2 years and older was considered. The following are key definitions for this exercise:

- **USDA Food Pattern:** A pattern of consumption designed to articulate the evidence on the relationship between diet and health and meet the known nutrient needs of targeted age-sex groups within calorie constraints. A pattern includes the recommended amounts to eat from 5 major food groups—Fruits, Vegetables, Grains, Protein Foods, and Dairy. The recommendations for Vegetables and Grains are further defined by subgroups. The USDA Food Patterns do not account for beverages that are not constituents of food groups or subgroups such as soft drinks and coffee or tea.
- **Item Cluster:** An identified grouping of the same or similar foods within each food group and subgroup. Item clusters are used to calculate the composite nutrient profile for each food group and subgroup used to define a USDA Food Pattern.
- **Nutrient Profile:** The anticipated nutrient content for each food group and subgroup that could be obtained by eating a variety of foods from that group/subgroup in nutrient-dense forms. The nutrient profiles are based on a weighted average of nutrient-dense forms of foods. The weighted average calculation considers a range of American food choices, but in nutrient-dense forms, and results in a food pattern that can be adapted to fit an individual's preferences.
- **Nutrient-Dense Representative Food:** The food within an item cluster with the least amount of added sugars, sodium, and solid fats. For some item clusters, the nutrient-dense representative food contains some added sugars, solid fats, and/or sodium.

For more information about the food pattern modeling definitions, visit:

<https://www.dietaryguidelines.gov/2020-advisory-committee-report/food-pattern-modeling/FPM-2-and-older>.

This exercise sought to demonstrate how reducing added sugars intake from current levels of consumption could provide an opportunity to increase intake of more nutrient-dense foods that help meet components of the USDA Food Patterns and specific nutrient goals for age-sex groups.

First, we calculated the estimated energy (kcal) from added sugars consumed through the top category sources of added sugars for each age-sex group. Then, we identified the food group and subgroup amounts that would be needed for each age-sex group to shift from current mean intakes to intakes that achieve recommendations. The nutrient profiles for each food group (available at: <https://www.dietaryguidelines.gov/2020-advisory-committee-report/food-pattern-modeling/FPM-2-and-older>) were used to calculate the energy needed to achieve the food group or subgroup recommendation and energy from added sugars were reallocated to under consumed food groups and subgroups. The Committee focused the redistribution of energy to under consumed food groups including Fruits, Vegetables, and Dairy. Energy was redistributed to Protein Foods for age-sex groups when underconsumed (e.g., adolescent females). As the final step, we estimated the nutrient contribution of the improved food group and subgroup intakes resulting from the redistribution of energy from added sugars.

The results are presented for 14 of 16 age-sex groups. Intakes of added sugars exceed recommended amounts for children ages 2 to 3 years, however, mean food group intakes generally meet or exceed recommended amounts in the USDA Food Patterns. Therefore, the reallocation exercise was not conducted in this age group.

Generally, reallocating a majority of energy from added sugars (i.e. from the top food category sources of added sugars) would provide the energy needed to achieve recommended amounts of Fruits, Vegetables, Dairy, and in some instances Protein Foods. The reallocated energy to achieve the recommended amounts of these food groups, in nutrient dense forms, is within 10 kcal of the estimated energy from added sugars obtained from the top 5 food category sources. We note that mean intakes of Total Protein Foods generally fall within recommended ranges for most age-sex groups. However, intakes of specific Protein Foods subgroups such as seafood fall short of recommended amounts. Likewise, total intakes of Grains are generally within, or exceed recommended amounts. Intakes of Whole Grains, however, fall well below recommended amounts. This exercise did not aim to redistribute intakes of Protein Foods subgroup amounts or realign intakes of refined and whole grains to recommended amounts.

For more information on the food category sources of added sugars and, the food group and nutrient distributions, visit: <https://www.dietaryguidelines.gov/2020-advisory-committee-report/data-analysis>.

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TABLE 1: Redistribution of Calories from Added Sugars: Males 4-8 years¹, assigned 1400 calorie pattern

Mean intakes of added sugars (kcal)	253 kcal		
Top 5 sources of added sugars ²	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Burgers and Sandwiches		
Percent contribution to added sugars intake from top 5 sources ^{2,3}	71-77 percent		
Energy from top 5 sources of added sugars ^{2,4}	179-195 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	1.1	0.4 (38)
VEGETABLES (cup eq)			
Dark green	0.14	0.1	0.2 (8)
Red Orange	0.43	0.3	0.2 (9)
Legumes	0.07	0.1	n/a
Starchy	0.50	0.3	0.2 (38)
Other	0.36	0.3	n/a
GRAINS ⁵ (oz eq)	5.0	6.7	n/a
PROTEIN FOODS (oz eq)	4	3.9	n/a
DAIRY (cup eq)	2.5	2.2	0.3 (25)

¹Data is reported for males ages 5-8 years unless otherwise indicated.

²Data reported for males ages 2-5 years and ages 6-11 years

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 2. Redistribution of Calories from Added Sugars: Females 4-8 years¹, assigned 1200 calorie pattern

Mean intakes of added sugars (kcal)	222 kcal		
Top 5 sources of added sugars ²	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Higher Fat Milk and Yogurt (ages 2-5), Burgers and Sandwiches (ages 6-11)		
Percent contribution to added sugars intake from top 5 sources ^{2,3}	74-75 percent		
Energy from top 5 sources of added sugars ^{2,4}	164-167 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1	1	n/a
VEGETABLES (cup eq)			
Dark green	0.14	0.1	n/a
Red Orange	0.43	0.1	0.3 (13)
Legumes	0.07	0.1	n/a
Starchy	0.50	0.3	0.2 (38)
Other	0.36	0.2	0.2 (37)
GRAINS ⁵ (oz eq)	4.0	6.2	n/a
PROTEIN FOODS (oz eq)	3	3.6	n/a
DAIRY (cup eq)	2.5	1.9	0.6 (49)

¹Data is reported for females ages 5-8 years unless otherwise indicated.

²Data reported for females ages 2-5 years and ages 6-11 years.

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 3. Redistribution of Calories from Added Sugars: Males 9-13 years¹, assigned 1800 calorie pattern

Mean intakes of added sugars (kcal)	302 kcal		
Top 5 sources of added sugars ²	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Burgers and Sandwiches		
Percent contribution to added sugars intake from top 5 sources ^{2,3}	76-77 percent		
Energy from top 5 sources of added sugars ^{2,4}	230-233 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	1	0.5 (48)
VEGETABLES (cup eq)			
Dark green	0.21	0.1	0.1 (4)
Red Orange	0.79	0.3	0.5 (22)
Legumes	0.21	0.1	0.1 (24)
Starchy	0.71	0.4	0.35 (65)
Other	0.57	0.3	0.25 (12)
GRAINS ⁵ (oz eq)	6.0	7.5	n/a
PROTEIN FOODS (oz eq)	5.0	5.0	n/a
DAIRY (cup eq)	3.0	2.3	0.3 (25)

¹Data is reported for males ages 9-13 years unless otherwise indicated.

²Data reported for males ages 6-11 years and ages 12-19 years

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 4. Redistribution of Calories from Added Sugars: Females 9-13 years¹, assigned 1600 calorie pattern

Mean intakes of added sugars (kcal)	253 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Burgers and Sandwiches (ages 6-11), Coffee and Tea (ages 12-19)		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	75 percent		
Energy from top 5 sources of added sugars ^{2,4}	190 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	0.9	0.5 (38)
VEGETABLES (cup eq)			
Dark green	0.21	0.1	0.3 (12)
Red Orange	0.57	0.3	0.3 (13)
Legumes	0.14	0.1	
Starchy	0.57	0.3	0.1 (19)
Other	0.5	0.3	0.2 (10)
GRAINS ⁵ (oz eq)	5.0	6.6	n/a
PROTEIN FOODS (oz eq)	5.0	4.0	n/a
DAIRY (cup eq)	3.0	1.9	1.1 (90)

¹Data is reported for females ages 9-13 years unless otherwise indicated.

²Data reported for females ages 6-11 years and ages 12-19 years

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 5. Redistribution of Calories from Added Sugars: Males 14-18 years¹, assigned 2200 calorie pattern

Mean intakes of added sugars (kcal)	344 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Burgers and Sandwiches		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	76 percent		
Energy from top 5 sources of added sugars ^{2,4}	261 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	2.0	0.9	1.1 (106)
VEGETABLES (cup eq)			
Dark green	0.29	0.1	0.3 (12)
Red Orange	0.86	0.3	0.5 (22)
Legumes	0.29	0.1	0.2 (48)
Starchy	0.86	0.4	
Other	0.71	0.3	0.2 (10)
GRAINS (oz eq)	7.0	8.1	n/a
PROTEIN FOODS (oz eq)	6.0	6.2	n/a
DAIRY (cup eq)	3.0	2.3	0.7 (57)

¹Data is reported for males ages 14-18 years unless otherwise indicated.

²Data reported for males ages 12-19 years

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 6. Redistribution of Calories from Added Sugars: Females 14-18 years¹, assigned 1800 calorie pattern

Mean intakes of added sugars (kcal)	267 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	75 percent		
Energy from top 5 sources of added sugars ^{2,4}	200 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	0.8	
VEGETABLES (cup eq)			
Dark green	0.21	0.1	
Red Orange	0.79	0.3	0.5 (21)
Legumes	0.21	0.1	
Starchy	0.71	0.4	
Other	0.57	0.3	
GRAINS (oz eq)	6.0	6.3	n/a
PROTEIN FOODS (oz eq)	5.0	3.9	1.0 (57)
DAIRY (cup eq)	3.0	1.6	1.5 (123)

¹Data is reported for females ages 14-18 years unless otherwise indicated.

²Data reported for females ages 12-19 years.

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 7. Redistribution of Calories from Added Sugars: Males 19-30 years¹, assigned 2400 calorie pattern

Mean intakes of added sugars (kcal)	334 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Burgers and Sandwiches, Coffee and Tea (ages 20-40), Breakfast Cereals and Bars (ages 12-19)		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	75-76 percent		
Energy from top 5 sources of added sugars ^{2,4}	251-254 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	2.0	0.9	1.0 (96)
VEGETABLES (cup eq)			
Dark green	0.29	0.1	0.25 (8)
Red Orange	0.86	0.4	0.5 (23)
Legumes	0.29	0.1	0.1 (24)
Starchy	0.86	0.4	
Other	0.71	0.5	0.25 (14)
GRAINS ⁵ (oz eq)	8.0	8.1	n/a
PROTEIN FOODS (oz eq)	6.5	8.1	n/a
DAIRY (cup eq)	3.0	2.0	1.0 (85)

¹Data is reported for males ages 19-30 years unless otherwise indicated.

²Data reported for males ages 12-19 years and ages 20-40 years

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 8. Redistribution of Calories from Added Sugars: Females 19-30 years¹, assigned 2000 calorie pattern

Mean intakes of added sugars (kcal)	254 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	72-75 percent		
Energy from top 5 sources of added sugars ^{2,4}	183-191 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	2.0	0.9	0.5 (50)
VEGETABLES (cup eq)			
Dark green	0.21	0.2	
Red Orange	0.79	0.3	0.5 (23)
Legumes	0.21	0.1	
Starchy	0.71	0.4	
Other	0.57	0.5	
GRAINS ⁵ (oz eq)	6.0	6.1	n/a
PROTEIN FOODS (oz eq)	5.5	5.6	n/a
DAIRY (cup eq)	3.0	1.4	1.25 (106)

¹Data is reported for females ages 19-30 years unless otherwise indicated.

²Data reported for females ages 12-19 years and ages 20-40 years.

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 9. Redistribution of Calories from Added Sugars: Males 31-50 years¹, assigned 2200 calorie pattern

Mean intakes of added sugars (kcal)	327 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Burgers and Sandwiches, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	72-75 percent		
Energy from top 5 sources of added sugars ^{2,4}	235-245 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	2.0	0.9	1.0 (99)
VEGETABLES (cup eq)			
Dark green	0.29	0.1	
Red Orange	0.86	0.4	0.5 (22)
Legumes	0.29	0.2	0.1 (24)
Starchy	0.86	0.5	
Other	0.71	0.6	
GRAINS ⁵ (oz eq)	7.0	7.7	n/a
PROTEIN FOODS (oz eq)	6.0	8.4	n/a
DAIRY (cup eq)	3.0	1.9	1.0 (85)

¹Data is reported for males ages 31-50 years unless otherwise indicated.

²Data reported for males ages 20-40 years and ages 41-50 years

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 10. Redistribution of Calories from Added Sugars: Females 31-50 years¹, assigned 1800 calorie pattern

Mean intakes of added sugars (kcal)	245 kcal		
Top 5 sources of added sugars ² :	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ^{2,3} :	71-72-percent		
Energy from top 5 sources of added sugars ^{2,4}	174-176 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	0.8	0.8 (69)
VEGETABLES (cup eq)			
Dark green	0.21	0.2	
Red Orange	0.79	0.3	0.5 (22)
Legumes	0.21	0.1	
Starchy	0.71	0.4	
Other	0.57	0.5	
GRAINS ⁵ (oz eq)	6.0	5.9	n/a
PROTEIN FOODS (oz eq)	5.0	5.7	n/a
DAIRY (cup eq)	3.0	1.4	1.0 (85)

¹Data is reported for females ages 9-13 years unless otherwise indicated.

²Data reported for females ages 6-11 years and ages 12-19 years.

³Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

⁴Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁵Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 11. Redistribution of Calories from Added Sugars: Males 51-70 years¹, assigned 2000 calorie pattern

Mean intakes of added sugars (kcal)	284 kcal		
Top 5 sources of added sugars:	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Burgers and Sandwiches, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ² :	71 percent		
Energy from top 5 sources of added sugars ³	202 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	2.0	1.0	1.0 (99)
VEGETABLES (cup eq)			
Dark green	0.21	0.2	
Red Orange	0.79	0.4	
Legumes	0.21	0.1	
Starchy	0.71	0.5	
Other	0.57	0.6	
GRAINS ⁴ (oz eq)	6.0	7.0	n/a
PROTEIN FOODS (oz eq)	5.5	7.9	n/a
DAIRY (cup eq)	3.0	1.7	1.2 (102)

¹Data is reported for males ages 51-70 years unless otherwise indicated.

²Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

³Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁴Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 12. Redistribution of Calories from Added Sugars: Females 51-70 years¹, assigned 1600 calorie pattern

Mean intakes of added sugars (kcal)	220 kcal		
Top 5 sources of added sugars:	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ² :	68 percent		
Energy from top 5 sources of added sugars ³	150 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	1.0	0.5 (50)
VEGETABLES (cup eq)			
Dark green	0.21	0.2	
Red Orange	0.57	0.4	0.1 (5)
Legumes	0.14	0.1	
Starchy	0.57	0.4	
Other	0.50	0.6	
GRAINS ⁴ (oz eq)	5.0	5.2	n/a
PROTEIN FOODS (oz eq)	5.0	5.6	n/a
DAIRY (cup eq)	3.0	1.3	1.1 (94)

¹Data is reported for females ages 51-70 years unless otherwise indicated.

²Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

³Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁴Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 13. Redistribution of Calories from Added Sugars: Males 71 years and older¹, assigned 1800 calorie pattern

Mean intakes of added sugars (kcal)	264 kcal		
Top 5 sources of added sugars:	Sweetened Beverages, Desserts and Sweet Snacks, Burgers and Sandwiches, Breakfast Cereals and Bars, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ² :	68 percent		
Energy from top 5 sources of added sugars ³	180 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	1.0	0.5 (50)
VEGETABLES (cup eq)			
Dark green	0.21	0.2	
Red Orange	0.57	0.4	
Legumes	0.14	0.1	
Starchy	0.57	0.5	
Other	0.50	0.5	
GRAINS ⁴ (oz eq)	5.0	6.8	n/a
PROTEIN FOODS (oz eq)	5.0	7.5	n/a
DAIRY (cup eq)	3.0	1.6	1.6 (139)

¹Data is reported for females ages 51-70 years unless otherwise indicated.

²Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

³Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁴Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 14. Redistribution of Calories from Added Sugars: Females 71 years and older¹, assigned 1600 calorie pattern

Mean intakes of added sugars (kcal)	212 kcal		
Top 5 sources of added sugars:	Sweetened Beverages, Desserts and Sweet Snacks, Candy and Sugars, Breakfast Cereals and Bars, Coffee and Tea		
Percent contribution to added sugars intake from top 5 sources ² :	69 percent		
Energy from top 5 sources of added sugars ³	146 kcal		
	Per Day Recommended USDA Food Pattern Amounts	Per Day Mean Intakes of USDA Food Pattern Amounts	Modeled Shift in Energy from Added Sugars: USDA Food Pattern Amounts (kcal)
FRUITS (cup eq.)	1.5	1.1	0.4 (40)
VEGETABLES (cup eq)			
Dark green	0.21	0.2	
Red Orange	0.57	0.4	
Legumes	0.14	0.1	
Starchy	0.57	0.4	
Other	0.5	0.5	
GRAINS ⁴ (oz eq)	5.0	5.1	n/a
PROTEIN FOODS (oz eq)	5.0	5.2	n/a
DAIRY (cup eq)	3.0	1.3	1.1 (109)

¹Data is reported for females ages 51-70 years unless otherwise indicated.

²Calculated as the sum of the percent of added sugars from the top five sources of added sugars based on food category sources of added sugars.

³Calculated as the percent contribution from the top sources of added sugars multiplied by the mean energy intake from added sugars.

⁴Total Grain intake exceeds recommended USDA Food Pattern amounts. No energy from added sugars was redistributed to this food group instead, there is a need to shift energy within the Grains food group from refined to whole grain foods.

Table 15. Increase in Nutrient Amounts¹ from Redistribution of Calories from Added Sugars by Age-Sex Groups

	M 4-8	F 4-8	M 9-13	F 9-13	M 14-18	F 14-18	M 19-30	F 19-30	M 31-50	F 31-50	M 51-70	F 51-70	M 71 +	F 71 +
Macronutrients														
Calories, kcal	116.5	107.2	201.0	189.1	258.9	141.3	251.2	177.8	230.0	186.1	200.1	147.0	176.4	132.6
Protein, g	4.8	7.4	7.9	12.4	12.8	13.6	13.8	12.8	12.6	10.8	11.9	10.7	14.1	10.4
Total lipid (fat), g	1.1	1.6	2.2	1.9	1.9	1.5	2.1	1.6	1.6	1.4	1.5	1.3	1.6	1.2
Carbohydrate, g	23.5	17.0	40.5	32.9	51.8	19.1	48.2	30.0	44.3	35.0	36.9	24.5	27.5	21.0
Fiber, total dietary, g	3.2	2.6	6.7	4.2	9.2	1.9	7.4	3.1	5.9	3.8	3.2	2.0	2.0	1.5
Cholesterol, mg	2.2	4.4	2.2	8.1	5.2	10.3	7.4	9.2	7.4	7.4	8.9	8.1	11.1	8.1
Saturated Fatty acids, g	0.3	0.5	0.5	0.8	0.6	0.8	0.8	0.8	0.7	0.6	0.8	0.7	0.9	0.7
Monounsaturated Fatty acids, g	0.4	0.7	0.9	0.6	0.5	0.4	0.6	0.4	0.3	0.3	0.3	0.3	0.4	0.3
Polyunsaturated Fatty acids, g	0.2	0.3	0.5	0.3	0.4	0.1	0.4	0.2	0.3	0.2	0.2	0.1	0.1	0.1
18:2 Linoleic acid, g	0.2	0.2	0.4	0.2	0.3	0.1	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.1
18:3 Linolenic acid, g	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
EPA + DHA (mg)	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Sugars (g)	0.3	0.3	0.4	0.7	0.9	0.6	0.9	0.8	0.9	0.8	1.0	0.7	0.9	0.7
Minerals														
Calcium, mg	124.2	218.3	146.7	384.6	297.1	443.9	377.5	407.6	348.4	336.7	387.9	350.3	470.3	345.5
Iron, mg	0.9	0.8	1.8	1.2	2.5	0.6	2.0	0.8	1.4	0.9	0.5	0.4	0.3	0.3
Magnesium, mg	34.2	37.1	58.4	59.9	82.8	45.1	77.9	51.1	64.1	50.8	49.3	39.1	47.0	35.1
Phosphorus, mg	119.4	179.0	184.7	305.3	292.8	336.2	328.6	316.7	301.9	269.7	291.9	261.7	344.5	253.5
Potassium, mg	487.0	440.7	847.8	772.1	1053.4	591.6	1022.2	703.7	862.4	729.9	609.0	479.3	535.4	402.7
Sodium, mg	92.2	151.2	116.8	249.9	177.0	287.9	233.2	261.3	215.6	214.3	237.4	218.9	293.0	215.0
Zinc, mg	0.7	1.1	1.1	1.8	1.8	1.9	1.9	1.8	1.7	1.5	1.6	1.5	1.9	1.4
Copper, mg	0.1	0.1	0.3	0.2	0.3	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Selenium, mcg	3.0	5.1	4.2	8.9	7.7	10.2	9.2	9.4	8.5	7.8	9.0	8.1	10.8	8.0
Vitamins														
Vitamin A, mcg RAE	163.6	152.7	243.2	311.3	348.2	314.0	363.9	305.9	287.6	284.6	138.1	154.4	161.6	119.0
Vitamin E, mg AT	0.7	0.6	1.2	1.1	1.7	0.7	1.5	0.8	1.1	0.9	0.4	0.3	0.2	0.2
Vitamin D, IU	17.6	35.3	17.7	64.7	41.2	82.3	58.9	73.5	58.8	58.8	70.6	64.7	88.2	64.7
Vitamin C, mg	33.0	21.6	51.0	46.1	73.8	21.4	69.2	36.4	51.5	45.4	30.2	19.4	15.2	12.1
Thiamin, mg	0.1	0.1	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.1
Riboflavin, mg	0.2	0.3	0.2	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.4
Niacin, mg	1.2	1.1	2.2	1.6	1.9	1.2	1.9	1.4	1.6	1.4	1.0	0.8	0.9	0.6
Vitamin B-6, mg	0.2	0.2	0.4	0.3	0.5	0.2	0.5	0.3	0.4	0.3	0.3	0.2	0.2	0.2
Vitamin B-12, mcg	0.3	0.6	0.3	1.0	0.6	1.3	0.9	1.1	0.9	0.9	1.1	1.0	1.4	1.0
Choline, mg	25.4	32.3	39.9	50.4	58.1	43.1	58.9	44.1	47.6	40.6	40.5	34.5	43.3	32.1
Vitamin K, mcg	59.8	89.3	45.0	91.1	99.0	5.8	85.8	7.7	10.2	8.8	4.2	3.3	2.3	1.8
Folate, mcg DFE	47.2	57.7	84.6	74.8	145.0	27.5	113.8	36.0	70.9	39.5	31.6	23.5	24.6	18.7

¹ Based on Nutrient Profiles for Ages 2-3 years; NHANES 2015-16 consumption data, 2 days of food intake, SR Legacy nutrient data