

Can nutrient goals be met when carbohydrate-containing foods and beverages are reduced in the Healthy U.S.-Style Dietary Pattern for ages 2 years and older?

Food Pattern Modeling Protocol

Christopher A. Taylor, PhD, RDN, LD, FAND,^{a,b} Steven A. Abrams, MD,^{a,c} Sarah L. Booth, PhD,^{a,d} Carol Byrd-Bredbenner, PhD, RD, FAND,^{a,e} Heather A. Eicher-Miller, PhD,^{a,f} Teresa Fung, ScD, RD,^{a,g} Valarie Blue Bird Jernigan, DrPH, MPH,^{a,h} Sameera A. Talegawkar, PhD,^{a,i} Deirdre Tobias, ScD,^{a,j} Meghan Adler, MS, RDN,^k Kara Beckman, PhD,^l Colleen M. Cruz, MPH, RDN,^k Janet de Jesus, MS, RD,^m Dana DeSilva, PhD, RD,^l Laural Kelly English, PhD,ⁿ Stephenie Fu,^o Hazel Hiza, PhD,^k Kevin Kuczynski, MS, RD,^k Verena McClain, MSc,^p TusaRebecca Pannucci, PhD, MPH, RD,^q Ramkripa Raghavan, DrPH, MPH, MSc,ⁿ Leigh Ann Richardson, MPH, PhD,^p Kelley Scanlon, PhD, RD,^r Eve Stoody, PhD^s

^a Food Pattern Modeling and Data Analysis Subcommittee, 2025 Dietary Guidelines Advisory Committee

^b The Ohio State University, Subcommittee Chair, Food Pattern Modeling

^c University of Texas at Austin

^d Tufts University, Committee Chair

^e Rutgers, The State University of New Jersey

^f Purdue University, Subcommittee Chair, Data Analysis

^g Simmons University

^h Oklahoma State University

ⁱ The George Washington University

^j Harvard University

^k Food Pattern Modeling Analyst; Nutrition Guidance and Analysis Division (NGAD), Center for Nutrition Policy and Promotion (CNPP), Food and Nutrition Service (FNS), U.S. Department of Agriculture (USDA)

^l Food Pattern Modeling Analyst, ODPHP; OASH, HHS

^m Designated Federal Officer and Nutrition Advisor, Office of Disease Prevention and Health Promotion (ODPHP); Office of the Assistant Secretary for Health (OASH), U.S. Department of Health and Human Services (HHS)

ⁿ Systematic Review Analyst, Nutrition Evidence Systematic Review (NESR) Branch; NGAD, CNPP, FNS, USDA

^o Senior Policy Advisor; Deputy Administrator's Office; CNPP, FNS, USDA

^p Food Pattern Modeling Analyst, Panum Telecom, under contract with FNS, USDA

^q Branch Chief, Nutrition and Economic Analysis Branch (NEAB); NGAD, CNPP, FNS, USDA

^r Senior Analytical Advisor; CNPP, FNS, USDA

^s Director, NGAD; CNPP, FNS, USDA



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Rationale

Food pattern modeling (FPM) is a methodology used to a) illustrate how hypothetical changes to the amounts or types of foods and beverages in a dietary pattern might affect meeting nutrient needs, and b) assist in defining quantitative dietary patterns that reflect the evidence for health-promoting diets synthesized from systematic reviews, while meeting energy and nutrient needs. As described in prior protocols, FPM takes a food-based approach, not a nutrient-based approach, and all modeling will occur at the food group, subgroup, and item level.

This protocol describes how FPM methodology will be used to examine the nutritional implications of reducing carbohydrate-containing foods and beverages from the 2020 USDA Healthy U.S.-Style (HUSS) Dietary Pattern for ages 2 years and older. The HUSS is developed to align with evidence on healthy dietary patterns described in systematic reviews conducted as part of the Committee's review of the evidence as well as meet the nutrient intake recommendations defined by the Dietary Reference Intakes (DRIs) for age and sex groups and the established Recommended Dietary Allowances (RDA), including the Adequate Macronutrient Distribution Ranges (AMDR) for proportion of energy from carbohydrate. Therefore, the HUSS dietary pattern necessarily contains foods and beverages that will contain carbohydrates across food groups. Examples of recommended food groups that contain carbohydrates include Fruits, Vegetables, Grains, and Dairy and Fortified Soy Alternatives, while other sources of carbohydrates are already limited in the HUSS dietary pattern, such as refined grain products and added sugars.

A healthful dietary pattern will be the starting point from which to examine nutrient related implications when removing carbohydrate-containing foods and beverages from the HUSS. Because there is limited consistency in the scientific literature regarding which foods should be consumed in place of carbohydrate-containing foods to inform pattern development, the objectives described in this protocol do *not* include analyses in which any food groups or subgroup quantities are modified to achieve the energy target or develop a new dietary pattern. Importantly, the current body of scientific literature does not provide a consensus for the amount or range of total carbohydrates consumed that is a "low" level of carbohydrate intake.¹ Existing research for diets based on a specific level of carbohydrate do not typically specify which carbohydrate-containing foods and beverages should be removed (e.g., refined grain products, added sugars) or retained (e.g., whole grains, fruit), or if all carbohydrate-sources should be equally targeted to reach the specified level of carbohydrate. Therefore, the proposed FPM analyses aim to model potential gaps created from the removal of nutrient dense versions of foods and beverages containing carbohydrates included in food groups and items that are recommended as part of the HUSS, without introducing foods and beverages that are not nutrient dense which are already limited in the HUSS.

This protocol acknowledges the forthcoming work, coordinated by the Joint Canada-U.S. DRI Working Group, to update the DRIs for macronutrients, including for carbohydrate, but uses the current DRIs, published in 2005, that provide the RDA as the average daily dietary intake levels that are sufficient to meet nutrient requirements of most individuals considering the minimum amount required for proper brain function. For carbohydrate, the current RDA is set at 130g/d (~520 kcal/d) for adults and children, ages 1 year and older; 175 g/d for individuals during pregnancy, and 210 g/d for individuals during lactation.

The rationale for developing this protocol is to address public comments that collectively highlight continued interest in diets that limit total carbohydrate intake. Thus, these FPM analyses are supported by public request. These FPM analyses aim to identify which nutritional gaps may occur from limiting carbohydrate-containing foods and beverages to the RDA (~130g/d; 520 kcal/d) as a result of reducing the Grains, Fruits, and/or Dairy and Fortified Soy Alternative food groups and the Starchy Vegetables subgroup from the HUSS Dietary Pattern for ages 2 and older. Results from these analyses will be used to discuss the degree to which nutritional goals might be met after reduction of these as sources of carbohydrates, and to help inform future directions.

Introduction

To prepare for the development of the *Dietary Guidelines for Americans, 2025-2030*, the U.S. Departments of Health and Human Services (HHS) and Agriculture (USDA) identified a proposed list of scientific questions based on relevance, importance, potential impact to federal programs, and avoiding duplication, which were posted for public comment.^{2,3} The Departments appointed the 2025 Dietary Guidelines Advisory Committee (Committee) in January 2023 to review evidence on the scientific questions. Their review forms the basis of their independent, science-based advice and recommendations to HHS and USDA, which is considered as the Departments develop the next edition of the Dietary Guidelines. These questions were refined and prioritized by the Committee for consideration in their review of the evidence.

The Committee will address the following question using FPM methodology, based on public comment:

Can nutrient goals be met when carbohydrate-containing foods and beverages are reduced in the Healthy U.S.-Style Dietary Pattern for ages 2 years and older?

The Committee will use FPM analyses to address this question, with support from USDA's FPM methods team. This protocol will establish the methods to analyze gaps and challenges in meeting nutritional goals based on hypothetical modifications of reducing and removing food groups and subgroups that are sources of carbohydrates within the 2020 HUSS Dietary Pattern for ages 2 years and older.

Historical perspectives

The 2020 USDA Dietary Patterns are designed to reflect health promoting dietary patterns and meet the known nutrient needs of the age-sex groups for which they are targeted, including total carbohydrate intake, within calorie constraints. Specifically, the HUSS includes recommended amounts across five major food groups: Fruits, Vegetables, Grains, Dairy and Fortified Soy Alternatives, and Protein Foods groups. While carbohydrate-containing foods are found in all food groups recommended within the HUSS, the top sources are from the Grains and Fruits food groups, and the Starchy Vegetables subgroup. Notably, the contribution of carbohydrate from the Protein Foods group is low, ~1.1-1.7% across the calorie-levels in the HUSS.

The FPM analyses in this protocol complement the work of the 2010, 2015, and 2020 Dietary Guidelines Advisory Committees. Over the last 15 years, three Committees have reviewed evidence examining relationships between macronutrient proportions and health outcomes by conducting systematic reviews. Collectively, these previous Committees concur in their determinations that limited or insufficient evidence addresses the relationship between diets based on carbohydrate proportions below the AMDR (without energy-restriction) and health, particularly among U.S. populations. Most of the available evidence has focused on diets with carbohydrate proportions below the AMDR in relation to cardiovascular disease and/or body weight outcomes but has substantial limitations. Many studies lack descriptive information about the foods consumed in the pattern as well as levels of all macronutrient proportions. Among the studies that do provide this information, the diets compared typically vary in diet quality as well as macronutrient proportions. Few included studies examine proportions of energy from carbohydrate that were distinctly lower (~30%) than the lowest limit of 45% as the AMDR.⁵ In the latest series of these reviews, the 2020 Committee focused on diets based on macronutrient proportions outside of the AMDR as follows:

- Carbohydrate, all ages: below 45% or above 65% energy;
- Protein for children, ages 1-3y: <5 or >20% energy; ages 4-18y: below 10% or above 30% energy; adults, ages 19 years or older: below 10% or above 35% energy

- Fat for children, ages 1-3y: <30 or >40 percent of energy; ages, 4-18y: <25 or >35 percent of energy; adults, ages 19 years or older: below 20% or above 35% energy

Specifically, the 2020 Committee concluded limited evidence that macronutrient distribution (without energy-restriction) was neither beneficial nor detrimental for risk of cardiovascular disease in adults,⁴ and could not draw conclusions related to risk of all-cause mortality,⁵ overweight/obesity,⁶ sarcopenia,⁷ or type 2 diabetes^{8*7} outcomes

Current perspectives

The *Dietary Guidelines for Americans, 2020-2025* provide food-based recommendations that are intended to meet the nutrient intake levels determined by the DRIs, not create new ones. The recommended proportion of energy from carbohydrate is established through the DRI⁷ as the AMDR, which is a range that relates to reduced risk of chronic disease, and with the RDA, which are the daily dietary intake levels sufficient to meet nutrient requirements of most individuals and ensure proper brain function. The current AMDR for carbohydrate in those ages 2 years and older is between 45 and 65 percent of energy. For carbohydrate, the current RDA is set at 130g/d (~520 kcal/d) for adults and children, ages 1 year and older; 175 g/d for individuals during pregnancy, and 210 g/d for individuals during lactation.

For individuals ages 1 year and older, carbohydrates accounted for 47% of total energy intake. While most populations meet the AMDR/DRI for energy from carbohydrate, many of the top contributors to carbohydrate intakes were from foods to limit, such as those that are sources of refined grains and added sugars.

Public interest has continued to grow since 2010 regarding diets that limit or remove carbohydrate, particularly as a strategy to manage blood glucose and/or body weight. These analyses, unlike other FPM protocols, will not be used to change/modify existing dietary patterns nor will they be used to create new patterns.

Methods

This section presents an overview of the methods, or the process, that will be used by the Committee to answer the question:

Can nutrient goals be met when carbohydrate-containing foods and beverages are reduced in the Healthy U.S.-Style Dietary Pattern for ages 2 years and older?

Develop a protocol

A FPM protocol is the plan for how USDA's FPM methodology will be used to conduct specific FPM analyses. The protocol is established by the Committee before the analysis is conducted. The protocol describes the components of the FPM process, including the analytic framework, analytic plan, analysis synthesis, conclusion development, and future research recommendations. It is developed through Committee discussion of the strengths and limitations for various analysis types and exercises to identify the most appropriate and relevant methods to answer each FPM question. FPM is an iterative process; thus, results from initial analyses may inform refinement of this or subsequent protocols.

* Boushey et al. Dietary Patterns and Sarcopenia: A Systematic Review. July 2020. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: <https://doi.org/10.52570/NESR.DGAC2020.SR0107>

When reviewing questions or topics addressed by prior Committees, the Committee uses the previous analytic framework, plan, and protocol to inform and refine their current approaches. Any changes to this protocol will be described in **Table 3. Protocol amendments**.

Develop an analytic framework

An analytic framework represents the overall scope of the FPM analyses, including the population, types of analyses, and data sources identified to answer the questions. It also includes the definitions of key terms.

Question:

Can nutrient goals be met when carbohydrate-containing foods and beverages are reduced in the Healthy U.S.-Style Dietary Pattern for ages 2 years and older?

Population:

The nutrient profiles modeled in these FPM analyses are based on dietary intake data among the U.S. population ages 12 months and older.

The nutrient profiles examined in these FPM analyses will be applied to the 2020 HUSS Dietary Pattern for ages 2 and older³ to identify potential nutrient gaps across life stages.

Types of analyses:

The overall FPM methodology used to develop and update the USDA Dietary Patterns includes six steps: **(1)** identifying appropriate energy levels for the patterns; **(2)** identifying nutritional goals for the patterns; **(3)** establishing food groupings and food group amounts; **(4)** determining the amounts of energy and nutrients that would be provided by consuming various foods within each food group or subgroup; **(5)** evaluating nutrient levels in each pattern against nutritional goals; and **(6)** adjusting and re-evaluating the patterns to align with current or potential recommendations.

As these analyses will not be used to change/modify existing dietary patterns nor will they be used to create new patterns – the **analysis question will focus on step 3 (establishing food groupings and food group amounts) and assess the implications of changes to step 3 throughout subsequent steps 4, and 5. This analysis will not include step 6.** Initial analyses will use existing food groups and subgroups identified in the 2020 HUSS Dietary Pattern, published in the *Dietary Guidelines for Americans, 2020-2025*.³ Nutrient profiles that underlie those patterns will be updated based on the 2025 Committee's analyses in answering the question: "*Should foods and beverages with lower nutrient density (i.e., those with added sugars, saturated fat, and sodium) contribute to item clusters, representative foods, and therefore the nutrient profiles for each food group and subgroup used in modeling the USDA Dietary Patterns?*" View the protocol developed by the 2025 Committee to answer that question.⁹

Analyses that model changes within step 3 will model the implications on meeting nutritional goals across the lifespan if food groups and subgroups that contribute a larger proportion of carbohydrates to the 2020 HUSS Dietary Pattern in comparison to other food groups and subgroups are hypothetically reduced or removed from the pattern.

FPM analyses planned to answer this question include incrementally decreasing carbohydrate-containing food groups and subgroups in the HUSS until the minimum RDA for carbohydrate is reached. This process will include:

- Identifying nutritional implications of carbohydrate reduction and specific nutrient gaps from reducing food groups and subgroups.
- Making research recommendations to inform future work on this topic.
- Highlighting potential nutrient gaps to inform future research designing and testing the health effects of carbohydrate-reduced dietary patterns.

Data sources:

- What We Eat in America, NHANES 2017-2018, individuals 1 years and over, days 1 and 2, weighted to produce nationally representative estimates. Available: ars.usda.gov/nea/bhnrc/fsrg
- FNDDS 2017-2018: U.S. Department of Agriculture, Agricultural Research Service. 2020. *USDA Food and Nutrient Database for Dietary Studies 2017-2018*. Available: ars.usda.gov/nea/bhnrc/fsrg
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- SR 28: US Department of Agriculture, Agricultural Research Service. 2016. Nutrient Data Laboratory. USDA National Nutrient Database for Standard Reference, Release 28 (Slightly revised). Version Current: May 2016. Available: ars.usda.gov/nea/bhnrc/mafcl
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Key definitions:

Key definitions in this protocol include existing definitions used by the 2020 Dietary Guidelines Advisory Committee and/or published in the *Dietary Guidelines for Americans, 2020-2025*, such as definitions operationalized in the HUSS Dietary Pattern.^{3,10} The 2025 Committee will continue to consider terminology and implications of terms related to representation of population groups and/or communication to the public. Future revisions to existing definitions and new working definitions for 2025 will be noted.

Food groups in the Healthy U.S.-Style (HUSS) Dietary Pattern: USDA's HUSS Dietary Pattern for ages 2 years and older provides amounts of five major food groups and *subgroups* including:

- Fruits
- Vegetables:
 - *Dark-Green; Red and Orange; Beans, Peas, and Lentils^a; Starchy; and Other*
 - ^a Beans, Peas, and Lentils are typically modeled as Vegetables in the HUSS Dietary Pattern but can also be counted toward the Protein Foods group. For the analyses in this protocol using the HUSS Dietary Pattern, Beans, Peas, and Lentils will only be modeled in the Vegetables group.
- Dairy and Fortified Soy Alternatives
- Grains:
 - *Whole Grains; Refined Grains*
- Protein Foods:
 - *Meats, Poultry, and Eggs^b; Seafood; Nuts, Seeds, and Soy Products; Beans, Peas, and Lentils^a*
 - ^a Beans, Peas, and Lentils are typically modeled as Vegetables in the HUSS Dietary Pattern but can also be counted toward the Protein Foods group. For the analyses in this protocol using the HUSS Dietary Pattern, Beans, Peas, and Lentils will only be modeled in the Vegetables group.

Oils: Oils are sources of essential fatty acids and include canola, corn, olive, peanut, safflower, soybean, and sunflower oils. Oils also are naturally present in nuts, seeds, seafood, olives, and avocados. The fat in some tropical plants, such as coconut oil, palm kernel oil, and palm oil, are not included in the oils category because they contain a higher percentage of saturated fat than do other oils.

Added sugars: Added sugars are either added during the processing of foods or are packaged as sweeteners (e.g., a bag of table sugar). Added sugars include sugars (free, mono- and disaccharides), sugars from syrups and honey, and sugars from concentrated fruit or vegetable juices that are in excess of what would be expected from the same volume of 100 percent fruit or vegetable juice of the same type.¹¹ Naturally occurring sugars, such as those in fruit or milk, are not defined as added sugars. Specific examples of added sugars that can be listed as an ingredient include brown sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, molasses, raw sugar, sucrose, trehalose, and turbinado sugar.

Limits on calories for other uses (as defined in the HUSS Dietary Pattern)^{3,10}: Foods are assumed to be in nutrient-dense forms, which are lean or low-fat and prepared with minimal added saturated fat, added sugars, refined starches, or sodium. If all food choices to meet food group recommendations are in nutrient-dense forms, a small number of calories remain within the overall limit of the pattern (i.e., limit on calories for other uses). The amount of calories depends on the total calorie level of the pattern and the amounts of food from each food group required to meet nutritional goals. Calories up to the specified limit can be used for added sugars, refined starches, saturated fat, and/or alcohol (for nonpregnant adults of legal drinking age only), or to eat more than the recommended amount of food in a food group.

Item clusters: Identified groupings of the same or similar foods or beverages that make up each food group and subgroup. Item clusters are used to calculate the weighted average consumption for use in calculating a nutrient profile for each food group and subgroup used in USDA FPM.

Nutrient-dense representative foods: For the purpose of USDA's FPM, each item cluster is assigned a nutrient-dense representative food which are those foods or beverages that represent the forms with the least amounts of added sugars, sodium, and saturated fats. The nutrient composition of the nutrient-dense representative food is used to represent the nutrient composition of the entire item cluster when calculating the nutrient profile for a food group or subgroup.

Nutrient profiles: The proportional nutrient composition from the item clusters that represent each food group and subgroup from the variety of foods in each food group in their nutrient-dense forms. The nutrient profiles are based on a weighted average of nutrient-dense forms of foods (i.e., a composite of nutrient-dense forms of foods and beverages within a food group or subgroup). The weighted average calculation considers a range of food choices in the United States, but in nutrient-dense forms, and results in a food pattern that can be adapted to fit an individual's preferences.

Dietary Reference Intakes (DRI) for Carbohydrates: The quantitative estimates of nutrient intakes applicable to "healthy" individuals in the U.S. and Canada¹² are provided as the Recommended Dietary Allowances (RDA). The RDA are the average daily dietary intake levels that are sufficient to meet nutrient requirements of most individuals. The RDA for carbohydrate considers the minimum amount required for proper brain function and currently set for/at:

- Adults and children, ages 1 year and older: 130g/d (~520 kcal/d).
- Individuals during pregnancy: 175 g/d
- Individuals during postpartum: 210 g/d

Acceptable Macronutrient Distribution Ranges (AMDR): Established by the Dietary Reference Intakes (DRI)¹² the AMDRs are the ranges of percent energy from carbohydrate, fat, and protein that are related to reduced risk of chronic disease. The current, age-appropriate AMDRs are:

- In adults,
 - o Ages 19 years and older:
 - carbohydrate levels between 45 and 65 percent of energy,
 - fat levels between 20 and 35 percent of energy, and/or
 - protein levels between 10 and 35 percent of energy
- In children,
 - o Ages 4 to 18 years
 - carbohydrate levels between 45 and 65 percent of energy,
 - fat levels between 25 and 35 percent of energy, and/or
 - protein levels between 10 and 30 percent of energy
 - o Ages 1 to 3 years
 - carbohydrate levels between 45 and 65 percent of energy,
 - fat levels between 30 and 40 percent of energy, and/or
 - protein levels between 5 and 20 percent of energy

Develop an analytic plan

Establish energy levels:

Dietary Reference Intakes (DRI) formulas are used to calculate Estimated Energy Requirements (EER) for each age-sex group and for three age groups specific to pregnancy and lactation (14-18 years, 19-30 years

and 31-50 years).¹³ (See **Table 1.**) EER is based on sex, age, height, weight, level of physical activity, and life stage and, during pregnancy, gestational weeks. The EERs for pregnancy account for the energy cost of tissue accretion and deposition based on pre-pregnancy BMI category and IOM recommended rates of gestational weight gain. The EERs for lactation account for the energy cost of human milk production and mobilization of postpartum tissue stores for gradual weight loss.³

Computed weight for a body mass index (BMI) of 22.5 kg/m² for adult males and 21.5 kg/m² for adult females (ages 19+ years) and median height are used to calculate reference energy levels for each age-sex group.³ The computed weight based on the corresponding BMI is obtained using the following equation.

$$\text{BMI } 22.5 \text{ or } 21.5 \times (\text{median height in m})^2 = \text{computed weight in kg}$$

These BMIs correspond to the 50th percentile (median) for reference weight among 19-year-old males and females based on the 2005 DRI for energy and the 2000 CDC Growth Charts.^{12,14} The EER calculations for adults follow the 2020 Committee’s approach to base reference weight on a BMI of 18.5 to <25 kg/m² but are enhanced to incorporate median heights for each age-sex group using updated NHANES data instead of using one median height for all adult males and one median height for all adult females.^{15,16} For children and adolescents ages 2-18 years, median height and the 50th percentile BMI-for-age are obtained using NHANES anthropometric data and the CDC Growth Charts.^{16,17} These weight, height/length, and BMI assumptions for estimating energy levels in FPM align with those being used in the Committee’s data analysis work. The use of median height/length also aligns with the DRI for energy report.¹³

A lower energy level (for inactive individuals) rounded to the nearest 200 calorie level and its associated pattern are determined for each age-sex group and used in evaluating the patterns against nutritional goals. (See step 2: **Establish nutritional goals.**) For ages 2 years and older, the 2020 Dietary Patterns generally are not age- or sex- specific. However, the 2020 Dietary Patterns at 1,000, 1,200, and 1,400 calorie levels are designed to meet the nutritional needs of children ages 2 through 8 years. Patterns from 1,600 to 3,200 calories are designed to meet the nutritional needs of children 9 years and older and adults. The 1,000 and 1,200 calorie level patterns are not intended for children 9 years and older or adults, and the 1,400-calorie level is not intended for children ages 10 years and older or adults. Individuals may require a calorie level that is higher or lower than the calorie level associated with each population-level age-sex group.

Table 1. Age-sex groups for which nutritional goals are examined in analyses

Children (Male/Female)	Males	Females	Pregnancy (Per 1 st , 2 nd , and 3 rd Trimesters)	Lactation (Per 0-6 and 7-12 months postpartum)
2-3 years				
	4-8 years	4-8 years		
	9-13 years	9-13 years		
	14-18 years	14-18 years	14-18 years	14-18 years
	19-30 years	19-30 years	19-30 years	19-30 years
	31-50 years	31-50 years	31-50 years	31-50 years
	51+ years	51+ years		

Establish nutritional goals:

Specific nutritional goal quantities for a dietary intake pattern are set according to energy intake level and based on the DRI age-sex group(s) for which the pattern is designed. Goals for total energy, fat, protein, carbohydrates, 3 fatty acids, 12 vitamins, 8 minerals, added sugars, and fiber are based on DRI reports released between 1997 and 2023 and on quantitative recommendations in the current *Dietary Guidelines for Americans, 2020-2025* (DGA).^{3,13,18-21} The macronutrients, fatty acids, vitamins, and minerals that are considered nutritional goals for these analyses are specified in **Table 2**. Because the dietary patterns are designed as a framework for achieving a healthy dietary pattern, the goals are the Recommended Dietary Allowance (RDA) amounts for nutrients having an RDA. The Adequate Intake (AI) is used as the nutrient goal when an RDA is not established.

Table 2. Nutritional goals for analyses

Food Component	Specific Nutrients (and Source of Goal ^a)
Energy	Energy (EER)
Macronutrients	Carbohydrate (AMDR/RDA), Protein (AMDR/RDA), Total Fat (AMDR)
Fatty Acids	Saturated Fatty Acids (DGA 2020-2025, <10% of total energy), 18:2 Linoleic Acid (AI), 18:3 Linolenic Acid (AI)
Vitamins	Vitamin A (RDA), Vitamin C (RDA), Vitamin D (RDA), Vitamin E (RDA), Vitamin K (AI), Thiamin (RDA), Riboflavin (RDA), Niacin (RDA), Vitamin B6 (RDA), Folate (RDA), Vitamin B12 (RDA), Choline (AI)
Minerals	Calcium (RDA), Copper (RDA), Iron (RDA), Magnesium (RDA), Phosphorus (RDA), Potassium (AI), Sodium (CDRR), Zinc (RDA)
Added Sugars	Added Sugars (DGA 2020-2025, <10% of total energy)
Dietary Fiber	Total Dietary Fiber (AI, 14g/1,000 calories) ^r

^a AI = Adequate Intake, AMDR = Acceptable Macronutrient Distribution Range, CDRR = Chronic Disease Risk Reduction Level, DGA 2020-2025 = *Dietary Guidelines for Americans, 2020-2025*, RDA = Recommended Dietary Allowance

Establish food groupings and amounts:

Food groups and subgroups in the USDA HUSS Dietary Patterns for ages 2 years and older (published in the *Dietary Guidelines for Americans, 2020-2025*) will be used in these analyses, along with the objective outlined below to examine the impacts of carbohydrate reduction on meeting nutritional goals across the lifespan.³

- Objective 1: Identify nutritional gaps that may occur when hypothetically reducing quantities of carbohydrate-containing food groups and subgroups as follows: Grains; Fruits; Starchy Vegetables; and/or Dairy and Fortified Soy Alternatives.

Determine the amounts of nutrients that would be obtained by consuming various foods within each group:

The anticipated energy and nutrient content, or nutrient profile, of each food group and subgroup will be determined based on the synthesis of results of the planned 2025 analyses to answer the question:

Should foods and beverages with lower nutrient density (i.e., those with added sugars, saturated fat, and sodium) contribute to item clusters, representative foods, and therefore the nutrient profiles for each food group and subgroup used in modeling the USDA Dietary Patterns?

The results of those analyses will determine if a “composite” system will be used to determine the nutrient profiles, or if a revised approach will be used which removes foods and beverages lower in nutrient density from contributing to the development of healthy dietary patterns.

For more information on the work planned for this question, view the protocol developed by the 2025 Committee on DietaryGuidelines.gov.⁹

Evaluate nutrient level in each pattern against nutritional goals:

Using the revised nutrient profiles that apply individuals 2 years and older, the nutrients provided by amounts recommended in the *Dietary Guidelines for Americans, 2020-2025* from each food group (and oils) are compared to the age, sex, and life stage-specific goals (usually at least 90% of the RDA or AI).

Iteration and re-evaluation of the patterns to align with current or potential recommendations:

Any nutritional goals that were not met within the structure of the remaining foods in the HUSS dietary pattern will be identified and potential health impacts will be considered by the Committee.

Conduct analyses

The USDA FPM methods team, in collaboration with the Committee, will use the analytic framework and analytic plan as a guide for conducting analyses and preparing tables and reports describing the analytic results for each analysis.

The first level of analysis will be by population, with results described for each age-sex group and life stage (e.g., pregnancy and lactation). Depending on the available data, subsequent analyses may be based on population groups, race and/or ethnicity, and/or socioeconomic position.

Synthesize analyses

The Committee will describe, compare, and combine the evidence from all FPM analyses conducted to answer this FPM question. Synthesis of the analyses will involve summarizing results with particular emphasis on implications for each life stage: children, adolescents, adults, older adults, and individuals who are pregnant or lactating. Implications for each of the existing USDA Dietary Patterns or rationale for new pattern development, including energy levels, will also be included.

Develop conclusion

The Committee will review and discuss the synthesis of the analyses to develop conclusion statements for each FPM question.

Recommend future research

The Committee will identify and document research gaps and methodological limitations throughout the FPM process. These gaps and limitations will be used to develop research recommendations that describe the research, data, and methodological advances that are needed to strengthen the process to model and develop healthy dietary patterns. Rationales for the necessity of additional or stronger research may also be provided with the research recommendations.

Protocol amendments

No amendments to the protocol have been made at this time. Any future amendments will be documented below in **Table 3**.

Table 3. Protocol amendments

Date	Protocol change	Description
N/A	N/A	N/A

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The Committee members are involved in: establishing all aspects of the protocol, which presents the plan for how they are planning to examine the scientific evidence, including the development of an analytic framework and analytic plan; synthesizing analysis results; and writing conclusion statements. The analytic framework and plan provide details about the types of analyses that will be conducted, synthesized, and from which conclusions will be drawn to inform subsequent FPM questions and the Committee’s advice on the development or refinement of healthy dietary patterns. The FPM Methods Team, with assistance from Federal Liaisons and Project Leadership, supports the Committee by facilitating, executing, and documenting the work necessary.

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