Federal Data Analysis Plan for the 2025 Dietary Guidelines Advisory Committee

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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 list of proposed scientific questions to be addressed by the 2025 Dietary Guidelines Advisory Committee (Committee), based on relevance, importance, potential Federal impact, avoiding duplication, and consideration of research availability. Proposed questions were posted for public comment from April 15th to May 16th, 2022.[1] The Departments appointed the Committee in January 2023 to review evidence on the scientific questions. The Committee's review forms the basis of its independent, science-based advice and recommendations to HHS and USDA, which is considered as the Departments develop the next edition of the *Dietary Guidelines*.

As part of that process, the following data analysis questions have been identified by Federal staff for scientific review by the Committee. Additional data analysis questions may also be added to complement the Committee's scientific review.

1. What is the current prevalence of nutrition-related chronic health conditions?
2. What are the current patterns of food and beverage intake?
3. What are the current intakes of food groups, nutrients, and dietary components?
4. Which nutrients and/or dietary components present a substantial public health concern because of underconsumption or overconsumption?

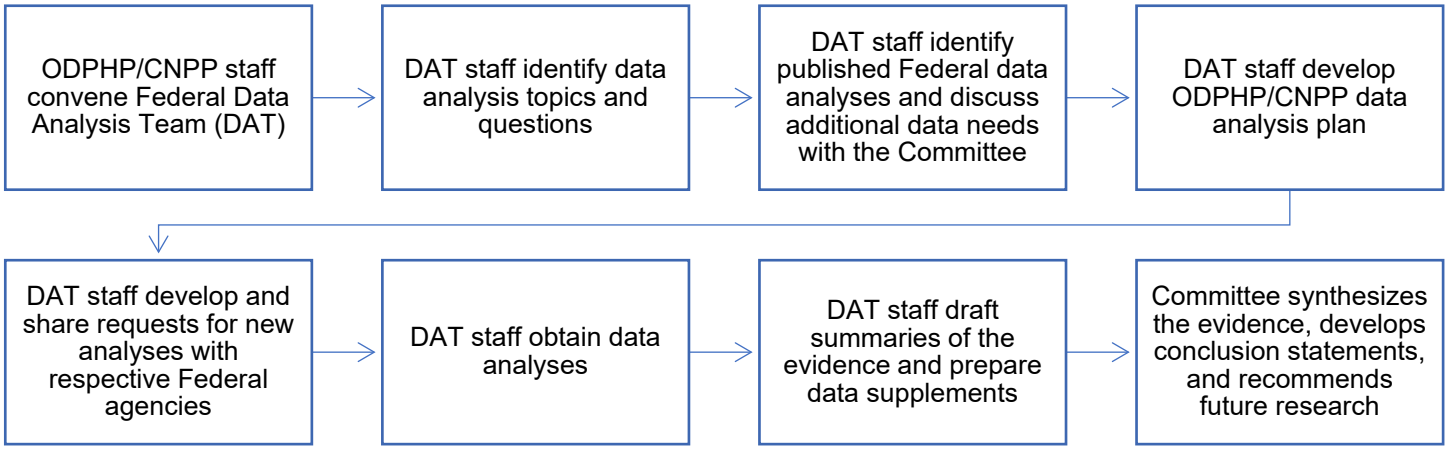
HHS' Office of Disease Prevention and Health Promotion (ODPHP) and USDA's Center for Nutrition Policy and Promotion (CNPP), with support from a Federal interagency data analysis team (DAT), conduct data analyses and prepare evidence summaries to address these questions. The Food Pattern Modeling and Data Analysis Subcommittee synthesize the evidence and develop conclusion statements to be discussed and finalized by the full Committee.

These questions update the data analyses conducted by the 2020 Dietary Guidelines Advisory Committee.[2]

Data analysis process

For the 2025 Committee, data analysis is an ODPHP/CNPP staff-led activity. ODPHP/CNPP staff support the Committee with planning and requesting analyses from supporting agencies within USDA and HHS and drafting summaries of the evidence. The Committee provides direction on analysis topics including health equity considerations, synthesize evidence, and develop conclusion statements. An overview of the full data analysis process and the roles of Federal staff and the Committee can be viewed in **Figure 1** below and in the subsections to follow.

Figure 1. 2025 Data analysis process and roles



Convene Federal DAT

ODPHP and CNPP assemble a Federal Data Analysis Team (DAT) to support the work of the Committee. The DAT is comprised of 1) ODPHP and CNPP staff who guide Committee discussions, plan analyses, and summarize evidence, and 2) interagency staff who analyze data on specific topics and questions. The interagency staff includes expert scientists with advanced degrees in nutrition, statistics, and epidemiology from the following Departments and agencies:

U.S. Department of Health and Human Services

- Office of Disease Prevention and Health Promotion; Office of the Assistant Secretary for Health
- Center for Food Safety and Applied Nutrition; Food and Drug Administration
- National Cancer Institute; National Institutes of Health
- National Center for Health Statistics; Centers for Disease Control and Prevention

U.S. Department of Agriculture

- Center for Nutrition Policy and Promotion; Food and Nutrition Service; Food, Nutrition, and Consumer Services
- Agricultural Research Service; Research, Education, and Economics

Identify data analysis topics and questions

The DAT determines data analysis topics and questions based on input from the Federal DAT, interagency work groups and committees, and public comments.

Identify published analyses and discuss additional data needs

The DAT determines which desired analyses are currently available and which analyses need to be requested from Federal agencies. The Committee discusses its data interests and needs, including additional analyses and/or variables for stratification, with the DAT.

Develop ODPHP/CNPP data analysis plan

The DAT creates an ODPHP/CNPP data analysis plan that describes the 2025 data analysis process and roles, data analysis strategy (including data sources, populations, and working definitions), available analyses,

and requests for new analyses to address the data analysis questions of the 2025 Committee. This document serves as the ODPHP/CNPP data analysis plan.

Develop requests for new analyses

The DAT prepares requests for new analyses, incorporating Committee feedback on data needs, and delivers the requests to the respective agencies who will complete the analyses. These agencies include the Agricultural Research Service (ARS), Center for Nutrition Policy and Promotion (CNPP), National Cancer Institute (NCI), and National Center for Health Statistics (NCHS), who are also members of the DAT. All requests for analyses are guided by the ODPHP/CNPP data analysis plan.

For the 2025 Committee, a first compilation of analysis requests focuses on populations by age, sex, life stage, and other select demographic subgroups (e.g., race and/or ethnicity and socioeconomic position). Subsequent analyses are requested to include additional population subgroups (e.g., food security category and participation in SNAP or WIC food assistance programs).

Obtain data analyses

The DAT receives completed analyses from the Federal agencies to whom the data analysis requests were provided. All completed analyses are reviewed by Federal statisticians and undergo the respective agency's clearance process before being provided to the DAT and the Committee.

Draft summaries of the evidence and data supplements

The DAT collates the new and published analyses into summaries of the evidence for each data analysis question. The new analyses are compiled into data supplements, which include tables and reports describing the results of each analysis. The summaries of the evidence and the data supplements are provided to the Committee for their synthesis.

Committee synthesizes evidence, develops conclusion statements, and recommends future research

The Committee uses the DAT's evidence summaries to synthesize the evidence, draft conclusion statements, and determine future research recommendations. The Committee describes, compares, and combines the evidence from all data analyses to answer each data analysis question and identify research gaps and limitations. The rationales for each named nutrient and/or dietary component of public health concern and for research recommendations based on identified gaps and limitations are also included.

Draft syntheses, conclusion statements, and research recommendations are reviewed and discussed with the full Committee to collectively inform the Committee's advice for its Scientific Report.

Data analysis strategy

The data analysis strategy represents the overall scope of the scientific method and includes the research questions, data sources identified to answer the questions, populations, working definitions for analysis, and data analysis methods.

Data analysis questions

The following data analysis questions have been identified for scientific review by the 2025 Committee. Additional data analysis questions may also be added to complement the Committee's scientific review.

1. What is the current prevalence of nutrition-related chronic health conditions?

2. What are the current patterns of food and beverage intake?
3. What are the current intakes of food groups, nutrients, and dietary components?
4. Which nutrients and/or dietary components present a substantial public health concern because of underconsumption or overconsumption?

Data sources

The DAT and Federal DAT prepare analyses which describe the current health and dietary intakes of Americans from nationally representative, Federal data sources for the Committee to review and interpret. Nationally representative data use survey samples that represent the total U.S. population, which produce estimates as if the entire population had been surveyed.[3]

Table 1 summarizes the Federal data sources identified to answer the data analysis questions of the 2025 Committee.

Table 1. Overview of Federal data sources for 2025 data analysis questions

Data Source	Supporting Agencies	Description of Data Sources
National Health and Nutrition Examination Survey (NHANES)[4]	U.S. Department of Health and Human Services (HHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Food Surveys Research Group (FSRG)	NHANES is a federal program of studies designed to assess the health and nutritional status of U.S. children and adults residing in the 50 states and District of Columbia. The nationally representative survey includes interviews (e.g., 24-hour dietary recall), questionnaires (e.g., demographics, food security, income), laboratory data (e.g., folate status or other biochemical markers of public health relevance), and physical examinations (e.g., height, weight, blood pressure), that measure dietary intakes and diet-related chronic disease rates in the U.S. population.
What We Eat in America, National Health and Nutrition Examination Survey (WWEIA, NHANES)[5]	USDA, ARS, FSRG	The dietary component of NHANES, called WWEIA, is the only nationally representative survey of total food and beverage consumption that captures intakes across life stages on a population level in the United States. The dietary data are collected using the gold standard for dietary assessment: a multiple pass, 24-hour dietary recall.
USDA Food and Nutrient Database for Dietary Studies (FNDDS)[6]	USDA, ARS, FSRG	FNDDS is a database that provides the energy and nutrient values for foods and beverages reported in WWEIA, NHANES. Data are available on energy and 64 nutrients for about 7,000 foods and beverages. It can be used to examine nutrient intakes from foods and beverages reported by participants in WWEIA, NHANES and assess adherence to Dietary Reference Intakes.
USDA Food Pattern Equivalents Database (FPED)[7]	USDA, ARS, FSRG	FPED converts foods and beverages from FNDDS into 37 USDA Food Patterns components. It can be used to examine food group intakes (e.g., Whole Fruit, Total Vegetables, Added Sugars) from foods and beverages reported by participants in WWEIA,

		NHANES and assess adherence to *Dietary Guidelines* food group recommendations.
WWEIA Food Categories[8]	USDA, ARS, FSRG	WWEIA Food Categories provide an application to analyze the foods and beverages reported by participants in WWEIA, NHANES. Each food and beverage are placed in one of 167 mutually exclusive food categories, where similar items are grouped together based on their typical use and nutrient content (e.g., Mixed Dishes – Asian, Savory Snacks, Cooked Cereals).
National Health Interview Survey (NHIS)[9]	HHS, CDC, National Center for Health Statistics	NHIS is a survey on health conducted using in-person, confidential household interviews. It provides data on the U.S. civilian noninstitutionalized population residing in the 50 states and District of Columbia for analyzing public health trends, assessing prevalence of health conditions, and tracking progress toward achieving national health objectives.
Surveillance, Epidemiology and End Results (SEER)[10]	HHS, NIH, National Cancer Institute, Division of Cancer Control and Population Sciences	The SEER Program is the authoritative source for cancer statistics in the U.S. population. SEER collects and publishes cancer incidence and survival data from population-based cancer registries. The 22 geographic areas of data collection from the U.S. states and American Indian/Alaskan Native communities are representative of the demographics of the entire U.S. population.
National Vital Statistics System (NVSS)[11]	HHS, CDC, National Center for Health Statistics	NVSS collects and disseminates the most complete data on U.S. births and deaths from vital registration systems across 50 states, 2 cities (District of Columbia and New York City), and 5 territories.
National Immunization Surveys (NIS)[12]	HHS, CDC, National Center for Immunization and Respiratory Diseases	NIS are a group of telephone surveys that provide current, population-based, state and local area estimates of vaccination coverage among children 19-35 months and teens 13-17 years. The surveys collect data through telephone interviews with parents or guardians in all 50 states, the District of Columbia, and some U.S. territories (U.S. Virgin Islands, Puerto Rico, Guam).

Data analysis methods

Data analysis methods are determined by expert data analysts with advanced degrees in nutrition, statistics, and epidemiology at the respective Federal agencies who complete the analyses. Methods have been thoroughly tested for validity and reliability and are considered Federally established standards for analyzing data. Completed analyses are reviewed by Federal agency statisticians and undergo the agency's clearance process before being made available to the Committee and the public. The most complete data years that are available for the 2025 Committee's work are used for the analyses:

- NHANES data years: 2017-2018*
- WWEIA, NHANES data years: 2017-2018*
- NHIS data years: 2018, 2019, 2020, and/or 2021
- SEER data years: 2019 and/or 2020

- NVSS data years: 2018, 2019, and/or 2020
- NIS data years: 2019

* For some analyses, multiple data cycles are combined to achieve adequate sample sizes. When possible, the special data release for 2017-March 2020 Prepandemic is incorporated. For analyses that examine changes in dietary intake or disease prevalence over time, earlier data years are used for comparison.

The data years for each analysis, including exceptions to the years above, are noted in the **2025 Analyses** section of this document.

Populations

Data analysis examines nationally representative samples of the U.S. population to capture current dietary intakes, dietary patterns, health condition prevalence, and nutrients and/or dietary components of public health concern for life stage and demographic subgroups, including:

Life stages*

- Infants (ages birth through 11 months)
- Young children (ages 12 through 23 months)
- Early childhood (ages 2-4 years)
- School-age children (ages 5-8 years)
- Late childhood/early adolescence (ages 9-13 years)
- Late adolescence (ages 14-18 years)
- Adults (ages 19-30 years)
- Adults (ages 31-59 years)
- Older adults (ages 60 years and older†)
- Pregnant females (ages 20-44 years)
- Lactating females (ages 20-44 years)

* Life stages may be modified or combined in the analyses due to sample size limitations or analysis methodologies.

† Individuals ages 80 years and older are topcoded at 80 years of age in NHANES 2017-2018, meaning that 80 years is the maximum documented age.[13]

Demographic subgroups

- Race and/or ethnicity
- Sex
- Socioeconomic position
    - Family income
    - Education

- Poverty income ratio
- Food security category ^
- Household SNAP participation – currently receiving and/or received in the last 12 months ^
- Child WIC participation – currently receiving ^

^ These demographic subgroups are new to the Committee data analysis process.

The 2025 Food Pattern Modeling and Data Analysis Subcommittee and Health Equity Working Group collaborated to prioritize additional subgroups for dietary intake data analysis using a health equity lens. These three subgroups (food security category, household SNAP participation, and child WIC participation) will be examined for selected analyses on dietary intake and nutrition-related chronic health conditions. Future additions or revisions to population subgroups will be noted.

Working definitions for analysis

Key terms and variables in the new data analysis requests are described by the following working definitions, which include existing definitions applied by the 2020 Committee and/or published in the *Dietary Guidelines for Americans, 2020-2025*.[14] The 2025 Committee will continue to consider terminology and implications of terms related to health equity and/or communication to the public, and future revisions to existing definitions will be noted.

- Beverage pattern: The quantities, proportions, variety, or combinations of different beverages in diets, and the frequency with which they are habitually consumed.

- Complementary foods and beverages (CFB): Foods and beverages (liquids, semisolids, and solids) other than human milk or infant formula provided to an infant or young child to provide nutrients and energy.

- Dietary Reference Intakes (DRIs): Nutrient reference values developed by the National Academies of Sciences, Engineering and Medicine that are specified based on age, sex, and life stage and cover more than 40 nutrients and food components.[15-18] Of note, the DRIs for energy were recently updated in 2023.

- Discrete beverage groups:[19]
    - Milk: Plain and flavored milk, other dairy drinks, and milk substitutes. (Excludes milk or milk substitutes added to alcoholic beverages, coffee, tea, and/or foods such as cereal.)
    - 100% juice: 100% fruit and/or vegetable juice.
    - Coffee/tea: Regular and decaffeinated coffee or tea with additions such as milk, cream and/or sweeteners, and coffee and tea drinks, including ready-to-drink.
    - Diet beverages: Diet soft drinks, diet sport/energy drinks and other diet drinks that are low- and no-calorie-sweetened, containing 40 kcal or less per reference amount customarily consumed.
    - Sweetened beverages: Energy containing soft drinks, fruit drinks, and sports/energy drinks with added sugars that contain more than 40 kcal per reference amount customarily consumed.
    - Soft drinks: Energy-containing drinks made with carbonated water.

  - Fruit drinks: Energy-containing fruit and/or vegetable drinks that are not 100% juice.
  - Sports/energy drinks: Energy-containing sport/energy drinks, nutritional beverages and protein/nutritional powders consumed with a beverage, smoothies, and grain drinks.
  - Water: Tap, bottled, flavored, carbonated and enhanced/fortified water containing < 5 kcal.
  - Alcoholic beverages: Beer, wine, liquor, and cocktails.

- Exclusive human milk feeding: Feeding human milk alone and not in combination with infant formula and/or CFB such as cow's milk; inclusive of World Health Organization (WHO) definitions of "exclusive" and "predominant" breastfeeding, which permit limited quantities of drops or syrups containing vitamins, minerals, or medicines; water and water-based drinks such as sweetened water and teas; fruit juice; oral rehydration salts solution; and ritual fluids.[20]

- Food categories and subcategories: Re-grouping of the WWEIA Food Categories into food categories and subcategories based on similarity, usage, and nutrient content using the methods described in the *2020 Data Analysis Supplement: Food Category Sources*.[21] Each food within the categories is linked to the food codes in the Food and Nutrient Database for Dietary Studies (FNDDS), which provides ingredient proportions and nutrient values. Additionally, the Food Patterns Equivalents Database (FPED) is used to determine food groupings.
  - For all food category and subcategory analyses of infants and young children (6 through 23 months), human milk and infant formula will be included in the Infant Foods category but will be excluded from analysis to reflect energy intake from complementary foods and beverages only.

- Food groups and subcomponents: Collections of foods that are similar in nutritional composition and contribute to an overall healthy eating pattern. For the purposes of these analyses, existing FPED components will be used to measure the following food groups, food subcomponents, and dietary components:
  - Total Vegetables (Subcomponents: dark green vegetables; total red and orange vegetables; tomatoes; other red and orange vegetables; beans, peas, lentils; total starchy vegetables; potatoes; other starchy vegetables; other vegetables)
  - Total Fruits (Subcomponents: citrus, melon, and berries; other fruit; fruit juice)
  - Total Grains (Subcomponents: whole grains, refined grains)
  - Total Dairy, including fortified soy alternatives (Subcomponents: milk, yogurt, cheese)
  - Total Protein Foods (Subgroups: total meats, poultry, and seafood; meat; cured meat; organ meat; poultry; seafood high in *n*-3 fatty acids; seafood low in *n*-3 fatty acids; eggs; nuts and seeds; soy products)
  - Oils
  - Added sugars

- Human milk: Mother's own milk provided at the breast (i.e., nursing) or expressed and fed fresh or after refrigeration/ freezing; donor milk is not examined in this review.

- Human milk feeding: Feeding human milk alone or in combination with infant formula and/or CFB such as cow's milk.

- Infant formula: Commercially prepared infant formula meeting Food and Drug Administration (FDA) and/or Codex Alimentarius international food standards.[22, 23]

- Life stage: The age groups who are identified as consuming foods and beverages (or complementary foods and beverages) as utilized by the *Dietary Guidelines for Americans, 2020-2025*: infants 6 through 11 months, young children 12 through 23 months, early childhood 2-4 years, school-age children 5-8 years, late childhood/early adolescence 9-13 years, late adolescence 14-18 years, adults 19-30 years, adults 31-59 years, and older adults 60+ years.[14] For some analyses, NHANES' recommended age categories for sample weights (<5 years, 6-11 years, 12-19 years, 20-39 years, 40-59 years, 60+ years) or the DRI age-sex groups may be used.[15, 24]
    - If the sample size is too small for any age or life stage group, the groupings may be expanded to larger ranges (e.g., 6 through 23 months, 2-18 years, 19-59 years).

- Mixed feeding: Feeding human milk and infant formula but not CFB such as cow's milk.

- Nutrients and/or dietary components of public health concern and dietary components to limit: Underconsumed and overconsumed nutrients or dietary components with supporting evidence through biochemical indices or functional status indicators, if available, plus evidence that the inadequacy or excess is directly related to a specific health condition, indicating public health relevance. For the purposes of these analyses, the nutrients and/or dietary components of public health concern and dietary components to limit from the *Dietary Guidelines for Americans, 2020-2025* and its framework for nutrients and food components of public health concern will be used:[14]
    - Nutrients and/or dietary components of public health concern (underconsumed dietary components): Calcium, potassium, dietary fiber, and vitamin D and, for pregnant women, iron.
    - Dietary components to limit (overconsumed dietary components): Sodium, added sugars, and saturated fat.

- Socioeconomic position: Indicators of socioeconomic position may include income in dollars, income as a percent of the poverty ratio, food security, eligibility for federal assistance programs, or level of education.

2025 Analyses

Published analyses

The published analyses that are available to answer each data analysis question are cited below, using the suggested format from each publication.

Current prevalence of nutrition-related chronic health conditions

Cancer

Department of Health and Human Services, National Institutes of Health, National Cancer Institute, Surveillance Research Program. SEER Explorer: SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 Registries. Accessed May 12, 2023. https://seer.cancer.gov/statistics-network/explorer/

Cardiovascular health

Carroll MD, Fryar CD. *Total and high-density lipoprotein cholesterol in adults: United States, 2015–2018*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and

Prevention, Department of Health and Human Services; 2020. NCHS Data Brief, no 363. https://www.cdc.gov/nchs/products/databriefs/db363.htm

Division for Heart Disease and Stroke Prevention, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Department of Health and Human Services. DHDSP Data Trends & Maps: Cholesterol Abnormalities, Prevalence of low HDL (high-density lipoprotein) cholesterol among US adults (20+); NHANES. Accessed May 8, 2023. https://www.cdc.gov/dhdsp/maps/dtm/index.html

Goulding M, Goldberg R, Lemon SC. Differences in Blood Pressure Levels Among Children by Sociodemographic Status. *Preventing Chronic Disease*. 2021;18:210058. http://dx.doi.org/10.5888/pcd18.210058

Stierman B, Afful J, Carroll MD, et al. *National Health and Nutrition Examination Survey 2017–March 2020 prepandemic data files—Development of files and prevalence estimates for selected health outcomes*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention, Department of Health and Human Services; 2021. National Health Statistics Reports no. 158. https://dx.doi.org/10.15620/cdc:106273

- *Also provides data on **Growth, body composition, and obesity**.*

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. *Crude percentages of stroke for adults aged 18 and over, United States, 2018*. National Health Interview Survey; 2018. Accessed May 12, 2023. https://www.cdc.gov/nchs/nhis/ADULTS/www/index.htm

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. *Percentage of coronary heart disease for adults aged 18 and over, United States, 2021*. National Health Interview Survey; 2022. Accessed May 12, 2023. https://wwwn.cdc.gov/NHISDataQueryTool/SHS_adult/index.html

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. *Percentage of diagnosed hypertension for adults aged 18 and over, United States, 2019—2021*. National Health Interview Survey; 2022. Accessed May 12, 2023. https://wwwn.cdc.gov/NHISDataQueryTool/SHS_adult/index.html

U.S. Department of Health and Human Services, Office of the Assistant Secretary for Health, Office of Disease Prevention and Health Promotion. Healthy People 2030. *Reduce the proportion of adults with high blood pressure — HDS-04 Data*. National Health and Nutrition Examination Survey. Accessed January 29, 2024. https://health.gov/healthypeople/objectives-and-data/browse-objectives/heart-disease-and-stroke/reduce-proportion-adults-high-blood-pressure-hds-04/data

Dental caries and tooth loss

Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. *Table 28: Untreated dental caries, by selected characteristics: United States, selected years 1988-1994 through 2015-2018*. National Health and Nutrition Examination Survey; 2019. https://www.cdc.gov/nchs/data/hus/2019/028-508.pdf

Fleming E, Afful J, Griffin SO. *Prevalence of tooth loss among older adults: United States, 2015–2018*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention, Department of Health and Human Services; 2020. NCHS Data Brief, no 368. https://www.cdc.gov/nchs/products/databriefs/db368.htm

Depression

Brody DJ, Pratt LA, Hughes J. *Prevalence of depression among adults aged 20 and over: United States, 2013–2016*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention, Department of Health and Human Services; 2018. NCHS Data Brief, no 303. https://www.cdc.gov/nchs/products/databriefs/db303.htm

Diabetes (i.e., type 2 diabetes, prediabetes, gestational diabetes)

Department of Health and Human Services, Centers for Disease Control and Prevention. National Diabetes Statistics Report website. Accessed May 12, 2023. https://www.cdc.gov/diabetes/data/statistics-report/index.html

Gregory ECW, Ely DM. *Trends and characteristics in gestational diabetes: United States, 2016–2020*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention, Department of Health and Human Services; 2022. National Vital Statistics Reports, vol 71 no 3. https://dx.doi.org/10.15620/cdc:118018

Food allergy

Black LI, Benson V. *Tables of Summary Health Statistics for U.S. Children: 2018 National Health Interview Survey*. 2019. https://www.cdc.gov/nchs/nhis/SHS/tables.htm

Growth, body composition, and obesity

Driscoll AK, Gregory ECW. *Increases in prepregnancy obesity: United States, 2016–2019*. Hyattsville, MD: National Center for Health Statistics, Centers for Disease Control and Prevention, Department of Health and Human Services; 2020. NCHS Data Brief, no 392. https://www.cdc.gov/nchs/products/databriefs/db392.htm

Fryar CD, Carroll MD, Afful J. *Prevalence of high weight-for-recumbent length among infants and toddlers from birth to 24 months of age: United States, 1971–1974 through 2017–2018*. NCHS Health E-Stats; 2020. https://www.cdc.gov/nchs/data/hestat/high-weight-recumbent-17-18/high-weight-recumbent.htm

Fryar CD, Carroll MD, Afful J. *Prevalence of overweight, obesity, and severe obesity among adults aged 20 and over: United States, 1960–1962 through 2017–2018*. NCHS Health E-Stats; 2020. https://www.cdc.gov/nchs/data/hestat/obesity-adult-17-18/obesity-adult.htm

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Current intakes of nutrients and dietary components

Analyses for total usual nutrient intakes and usual nutrient intakes will be used to estimate current intakes of food groups, nutrients, and dietary components. These are only listed in the ***Nutrients and/or dietary components of public health concern*** *section below to limit repetition. Other analyses that will also inform this topic are cited below.*

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Nutrients and/or dietary components of public health concern

Total usual nutrient intakes

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Usual nutrient intakes

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U.S. Department of Agriculture, Agricultural Research Service. *Usual Nutrient Intake from Food and Beverages, by Gender and Age, What We Eat in America, NHANES 2017- March 2020 Prepandemic*. 2023. https://www.ars.usda.gov/nea/bhnrc/fsrg

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New analyses

The new analyses requested for answering the Committee's data analysis questions are described below.

Current prevalence of nutrition-related chronic health conditions

The current prevalence of nutrition-related chronic health conditions will be described and evaluated in the following ways:

Cardiovascular health

Prevalence of high LDL cholesterol (≥130 mg/dL)[25] among children and adolescents ages 12-19 years using NHANES 2017-March 2020 Prepandemic

- By BMI status (underweight, healthy weight, overweight, obese)
- By race and/or ethnicity
- By sex

Prevalence of high LDL cholesterol (≥130 mg/dL) among children and adolescents ages 12-19 years using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status (yes, no)

Prevalence of high LDL cholesterol (≥100 mg/dL)[25] among adults and older adults ages 20 years and older using NHANES 2017-March 2020 Prepandemic

- By age (20-39, 40-59, 60+, 20+) and sex
- By race and/or ethnicity and sex

Prevalence of high LDL cholesterol (≥100 mg/dL) among adults and older adults ages 20 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)
- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Prevalence of low HDL cholesterol (<40 mg/dL)[25] among children and adolescents ages 12-19 years using NHANES 2017-March 2020 Prepandemic

- By BMI status (underweight, healthy weight, overweight, obese)
- By race and/or ethnicity
- By sex

Prevalence of low HDL cholesterol (<40 mg/dL) among children and adolescents ages 12-19 years using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status (yes, no)

Prevalence of low HDL cholesterol (<40 mg/dL) among adults ages 20 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)
- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Prevalence of hypertension among children and adolescents ages 8-17 years using NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status (yes, no)

Prevalence of hypertension among adults ages 20 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)
- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Prevalence of high triglycerides (≥150 mg/dL) among adults ages 20 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)
- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Prediabetes and Diabetes

Prevalence of prediabetes[26] among children and adolescents ages 12-19 years using NHANES 2017-March 2020 Prepandemic

- By race and/or ethnicity
- By sex

Prevalence of prediabetes among children and adolescents ages 12-19 years using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status (yes, no)

Prevalence of diagnosed, undiagnosed and total type 2 diabetes among adults ages 18 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (18-44, 45-64, 65 and older, 18 and older)
- By household SNAP participation status (yes, no) and age in years (18-44, 45-64, 65 and older, 18 and older)

Metabolic syndrome

Crude and age-adjusted prevalence of metabolic syndrome[27] among adults and older adults ages 20 years and older using NHANES 2017-March 2020 Prepandemic

- By age in years (20-39, 40-59, 60+, 20+)
- By race and/or ethnicity
- By sex

Prevalence of metabolic syndrome among adults and older adults ages 20 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)
- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Weight Status

Prevalence of overweight, obesity, and severe obesity among adults ages 20 years and older using NHANES 2017-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)

- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Prevalence of overweight, obesity, and severe obesity among children and adolescents ages 2-19 years using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (2-5, 6-11, 12-19, 2-19)
- By household SNAP participation status (yes, no) and age in years (2-5, 6-11, 12-19, 2-19)
- By child WIC participation status (yes, no) and age in years (2-5)

Mean body weight, height, waist circumference, and body mass index among adults ages 20 years and older using NHANES 2015-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (20-39, 40-59, 60 and older, 20 and older)
- By household SNAP participation status (yes, no) and age in years (20-39, 40-59, 60 and older, 20 and older)

Current patterns of food and beverage intake

Current patterns of food and beverage intake will be described and evaluated in the following ways:

Current patterns of food intake

Food category and subcategory sources of energy intake (distribution percentages) among children, adolescents, adults, and older adults ages 2 years and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By household SNAP participation status – currently receives (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By household SNAP participation status – received in past 12 months (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By child WIC participation status (yes, no) and age in years (2-4)
- By household poverty income ratio and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By race and/or ethnicity and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)

HEI-2020 total and component scores among children, adolescents, adults, older adults, and pregnant and lactating females ages 2 years and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By household SNAP participation status (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By child WIC participation status (yes, no) and sex (males and females, males, females)

HEI-Toddlers-2020 total and component scores among young children ages 12 through 23 months using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status (yes, no)
- By child WIC participation status (yes, no)

Prevalence of late evening consumption among adolescents ages 12-19 years using WWEIA, NHANES 2015-March 2020 Prepandemic, day 1

- By age and sex
- By race and/or ethnicity and sex

Food category sources of foods most frequently consumed in the late evening: Percentage of late evening consumers eating and mean energy contribution per consumer among adolescents ages 12-19 years using WWEIA, NHANES 2015-March 2020 Prepandemic, day 1

Percentages of adolescents ages 12-19 years consuming specified categories of total energy intake from late evening foods/beverages using WWEIA, NHANES 2015-March 2020 Prepandemic, day 1

- By sex

Percentage of adults ages 20 years and older who consumed a specified number of snacks in a day using WWEIA, NHANES 1999-2000 and 2017-March 2020 Prepandemic, day 1

Mean snacking frequency among adults ages 20 years and older using WWEIA, NHANES 2017-March 2020 Prepandemic, day 1

- By weight status

Food category sources of total snack calories among adults ages 20 years and older using WWEIA, NHANES 2017-March 2020 Prepandemic, day 1

Prevalence of late evening consumption among adults ages 20 years and older using WWEIA, NHANES 2015-March 2020 Prepandemic, day 1

- By age and sex
- By race and/or ethnicity and sex

Food category sources of foods most frequently consumed in the late evening: Percentage of reporters who consumed and mean energy contribution among adults ages 20 years and older using WWEIA, NHANES 2015-March 2020 Prepandemic, day 1

Current patterns of beverage intake

Percentage consuming beverage types at least once per day among infants and young children ages 6 through 23 months using WWEIA, NHANES 2009-2018, day 1

- By age in months (6-11, 12-23) and infant milk or beverage source

Mean daily contribution from beverage types to dietary components among infants and young children ages 6 through 23 months using WWEIA, NHANES 2009-2018, day 1

- By age in months (6-11, 12-23), beverage type, and all beverages and foods
  - *Beverage types include infant milk source (i.e., human milk and/or infant formula), other beverage types, and all beverage types.*

Percent distribution of daily dietary component intake from beverages excluding human milk or infant formula among infants and young children ages 6 through 23 months using WWEIA, NHANES 2009-2018, day 1

- By age in months (6-11, 12-23) and beverage types (excluding human milk or infant formula)

Percent contribution of beverage types to daily dietary component intake among infants and young children ages 6 through 23 months using WWEIA, NHANES 2009-2018, day 1

- By age in months (6-11, 12-23), beverage types (excluding human milk or infant formula), and all beverage types

Contribution of daily beverage intake to total daily intake of food groups and subgroups among adults and older adults ages 20 years and older using WWEIA, NHANES 2015-2018, day 1

- By age in years (20-64, 65+)
- By age in years (20-64, 65+) and sex

Percent who consumed beverage types in a day among pregnant and lactating females ages 20-44 years using WWEIA, NHANES 2015-2018, day 1

- By beverage type and life stage (pregnancy, lactation, not pregnant or lactating)

Mean daily beverage intake (fl. oz) among pregnant and lactating females ages 20-44 years using WWEIA, NHANES 2015-2018, day 1

- By beverage type and life stage (pregnancy, lactation, not pregnant or lactating)

Percent contribution from beverages to mean daily intake of energy, nutrients, and dietary components among pregnant and lactating females ages 20-44 years using WWEIA, NHANES 2015-2018, day 1

- By life stage (pregnancy, lactation, not pregnant or lactating)

Contribution of daily beverage intake to total daily intake of FPED components and subcomponents among pregnant and lactating females ages 20-44 years using WWEIA, NHANES 2015-2018, day 1

- By life stage (pregnancy, lactation, and not pregnant or lactating)

Food category sources of beverages most frequently consumed in the late evening: Percentage of reporters who consumed and mean energy contribution among adults ages 20 years and older using WWEIA, NHANES 2015-March 2020, day 1

Current intakes of food groups, nutrients, and dietary components

Current intakes of food groups, nutrients, and dietary components will be described and evaluated in the following ways:

Current intakes of food groups

Mean and percent intakes of FPED components from complementary foods and beverages among infants ages 6 through 11 months using WWEIA, NHANES 2009-2018, day 1

- Total (all infant milk sources)
- By infant milk source (i.e., human milk and/or infant formula)
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
  - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Mean and percent intakes of FPED components among young children ages 12 through 23 months using WWEIA, NHANES 2009-2018, day 1

Mean daily intake of FPED components from foods and beverages among children, adolescents, adults, and older adults ages 2 years and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age-sex group in years (males and females: 2-19, 2+, 20+; males: 2-19, 20-39, 40-59, 60 and older, 70 and older, 2+, 20+; females: 2-19, 20-39, 40-59, 60 and older, 70 and older, 2+, 20+)
- By household SNAP participation status (yes, no) and age in years (males and females: 2-19, 2+, 20+; males: 2-5, 6-11, 12-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70 and older, 2-19, 2+, 20+; females: 2-5, 6-11, 12-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70 and older, 2-19, 2+, 20+)
- By child WIC participation status (yes, no) and sex (males and females, males, females)

Mean and usual intake distributions of FPED components among young children, children, adolescents, adults, and older adults ages 1 year and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (1, 2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 1 and older, 19 and older)
- By household SNAP participation status (yes, no) and age in years (1, 2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 1 and older, 19 and older)
- By child WIC participation status (yes, no) and sex (males and females, males, females)

Mean daily intake of FPED components from foods and beverages among pregnant and lactating females ages 20-44 years using WWEIA, NHANES 2015-2018, day 1

- By life stage (pregnancy, lactation, not pregnant or lactating)

Mean daily intake of FPED components from foods and beverages during pregnancy and lactation (females ages 20-44 years) using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status (yes, no)

Mean and usual intake distributions of FPED components among pregnant and lactating females ages 20-44 years using WWEIA, NHANES 2011-March 2020

- By household food security category (full, marginal, low, very low) and age in years (1, 2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 1 and older, 19 and older)
- By household SNAP participation status (yes, no) and age in years (1, 2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 1 and older, 19 and older)

Food category sources of FPED component intakes (distribution percentages) from complementary foods and beverages among infants ages 6 through 11 months (total and grouped by infant milk source, i.e., human milk and/or infant formula) using WWEIA, NHANES 2009-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status – currently receives (yes, no)
- By household SNAP participation status – received in past 12 months (yes, no)
- By child WIC participation status (yes, no)
- By household poverty income ratio (<1.31 percent FPL, ≤1.85 percent FPL, 1.86 to ≤3.50 percent FPL, >3.50 percent FPL)
    - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
    - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Food category and subcategory sources of FPED component intakes (distribution percentages) from foods and beverages among young children ages 12 through 23 months using WWEIA, NHANES 2009-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status – currently receives (yes, no)
- By household SNAP participation status – received in past 12 months (yes, no)
- By child WIC participation status (yes, no)
- By household poverty income ratio (<1.31 percent FPL, ≤1.85 percent FPL, 1.86 to ≤3.50 percent FPL, >3.50 percent FPL)

Food category and subcategory sources of FPED component intakes (distribution percentages) among children, adolescents, adults, and older adults ages 2 years and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 19 and older)

- By household SNAP participation status – currently receives (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By household SNAP participation status – received in past 12 months (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By child WIC participation status (yes, no) and age in years (2-4)
- By household poverty income ratio (<1.31 percent FPL, ≤1.85 percent FPL, 1.86 to ≤3.50 percent FPL, >3.50 percent FPL) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 19 and older)
- By race and/or ethnicity and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 19 and older)

Percentage of young children, children, adolescents, adults, older adults, and pregnant and lactating females ages 1 year and older who are below, at, or above food group and subgroup recommendations (total and for each food group/subgroup) in the Healthy U.S.-Style Dietary Pattern published in the *Dietary Guidelines for Americans, 2020-2025* using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (1, 2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 1 and older, 19 and older)
- By household SNAP participation status (yes, no) and age in years (1, 2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 1 and older, 19 and older)
- By child WIC participation status (yes, no) and sex (males and females, males, females)

Current intakes of nutrients and dietary components

Mean nutrient intakes from complementary foods and beverages among infants ages 6 through 11 months using WWEIA, NHANES 2009-2018, day 1

- Total (all infant milk sources)
- By infant milk source (i.e., human milk and/or infant formula)
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
  - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Mean nutrient intakes from food and beverages among young children ages 12 through 23 months using WWEIA, NHANES 2009-2018, day 1

Mean and usual nutrient intake distributions (percentiles) from infant milk and complementary foods and beverages among infants ages 6 through 11 months using WWEIA, NHANES 2009-2018

- Total (all infant milk sources)
- By infant milk source (i.e., human milk and/or infant formula)
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
  - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Mean nutrient intakes from infant milk, complementary foods and beverages, and dietary supplements among infants ages 6 through 11 months using WWEIA, NHANES 2009-2018, day 1

- Total (all infant milk sources)
- By infant milk source (i.e., human milk and/or infant formula)
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
  - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Mean nutrient intakes from foods, beverages, and dietary supplements among young children ages 12 through 23 months using WWEIA, NHANES 2009-2018, day 1

Mean and usual nutrient intake distributions (percentiles) from food and beverages among young children, children, adolescents, adults, and older adults ages 1 year and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age-sex group in years (males and females: 1-8, 1+, 19+; males: 9-18, 19-50, 51-70, 51 and older, 71 and older; females: 9-18, 19-50, 51-70, 51 and older, 71 and older)
- By household SNAP participation status (yes, no) and age in years (males and females: 1-3, 4-8, 2+, 19+; males: 9-13, 14-18, 19-30, 31-50, 51-70, 51 and older, 71 and older; females: 9-13, 14-18, 19-30, 31-50, 51-70, 51 and older, 71 and older)
- By child WIC participation status (yes, no) and sex (males and females, males, females)

Comparison of usual nutrient intakes from complementary foods and beverages to DRIs among infants ages 6 through 11 months using WWEIA, NHANES 2009-2018

- Total (all infant milk sources)
- By infant milk source (i.e., human milk and/or infant formula)
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
  - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Comparison of total usual nutrient intakes from complementary foods, beverages, and dietary supplements to DRIs among infants ages 6 through 11 months using WWEIA, NHANES 2009-2018

- Total (all infant milk sources)
- By infant milk source (i.e., human milk and/or infant formula)
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding) Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Mean energy intake by snacking frequency among adults ages 20 years and older using WWEIA, NHANES 2017-March 2020 Prepandemic, day 1

Mean intakes of energy, nutrients, and dietary components contributed from snacks among adults ages 20 years and older using WWEIA, NHANES 2017-March 2020 Prepandemic, day 1

- By age
- By sex

Mean intakes of energy, nutrients, and dietary components contributed from late evening consumption among adults ages 20 years and older using WWEIA, NHANES 2015-March 2020 Prepandemic, day 1

- By age
- By race and/or ethnicity
- By sex

Mean energy intake consumed during late evening and other times of the day among adults ages 20 years and older using WWEIA, NHANES 2015- March 2020 Prepandemic, day 1

- By late evening consumption status (reporter or non-reporter)
- By late evening consumption status and sex
- By late evening consumption status and race and/or ethnicity

Food category sources of nutrients and dietary components from complementary foods and beverages (distribution percentages) among infants ages 6 through 11 months (total and grouped by infant milk source, i.e., human milk and/or infant formula) using WWEIA, NHANES 2009-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status – currently receives (yes, no)

- By household SNAP participation status – received in past 12 months (yes, no)
- By child WIC participation status (yes, no)
- By family poverty income ratio (<1.31 percent FPL, ≤1.85 percent FPL, 1.86 to ≤3.50 percent FPL, >3.50 percent FPL)
- By race and/or ethnicity
  - *Human milk group: Receive human milk and no formula (exclusive human milk feeding)*
  - *Infant formula group: Receive any infant formula (may include human milk feeding and/or mixed feeding)*

Food category and subcategory sources of nutrients and dietary components from foods and beverages (distribution percentages) among young children ages 12 through 23 months using WWEIA, NHANES 2009-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low)
- By household SNAP participation status – currently receives (yes, no)
- By household SNAP participation status – received in past 12 months (yes, no)
- By child WIC participation status (yes, no)
- By family poverty income ratio (<1.31 percent FPL, ≤1.85 percent FPL, 1.86 to ≤3.50 percent FPL, >3.50 percent FPL)
- By race and/or ethnicity

Food category and subcategory sources of nutrients and dietary components (distribution percentages) among children, adolescents, adults, and older adults ages 2 years and older using WWEIA, NHANES 2011-March 2020 Prepandemic

- By household food security category (full, marginal, low, very low) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 19 and older)
- By household SNAP participation status – currently receives (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By household SNAP participation status – received in past 12 months (yes, no) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 2 and older, 19 and older)
- By child WIC participation status (yes, no) and age in years (2-4)
- By family poverty income ratio (<1.31 percent FPL, ≤1.85 percent FPL, 1.86 to ≤3.50 percent FPL, >3.50 percent FPL) and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 19 and older)
- By race and/or ethnicity and age in years (2-4, 5-8, 9-13, 14-18, 19-30, 31-59, 60 and older, 71 and older, 19 and older)

Nutrients and/or dietary components of public health concern

The nutrients and/or dietary components which may be of public health concern will be described and evaluated using biochemical indicators of nutrition status in the following ways:

Iron

Prevalence of inflammation-adjusted ferritin concentration (>150 µg/L)[28] at risk of iron overload among female children, adolescents, adults, pregnant females, and lactating females ages 12-49 years using NHANES 2015-March 2020 Prepandemic

- By age in years (12-19, 20-49) and sex (female)
- By pregnancy and lactation life stages (females ages 20-44 years)

Prevalence of high serum ferritin concentration (>150 ng/mL)[29] among female children, adolescents, adults, pregnant females, and lactating females ages 12-49 years using NHANES 2017-March 2020 Prepandemic

- By age in years (12-19, 20-49) and sex (female)

- By pregnancy and lactation life stages (females ages 20-44 years)

Prevalence of high serum soluble transferrin receptor concentration (>4.4 mg/L)[29] among young children, children, adolescents, adults, pregnant females, and lactating females ages 1-49 years using NHANES 2017-March 2020 Prepandemic

- By age in years (1-5)
- By age in years (12-19, 20-49) and sex (female)
- By pregnancy and lactation life stages (females ages 20-44 years)

Prevalence of inflammation-adjusted ferritin concentration deficiency among young children and children ages 1-5 (<12 µg/L)[28] and female children, adolescents, adults, pregnant females, and lactating females ages 12-49 years (<15 µg/L)[28] using NHANES 2017-March 2020

- By age in years (1-5)
- By age in years (12-19, 20-49) and sex (female)
- By pregnancy and lactation life stages (females ages 20-44 years)

Prevalence of serum ferritin deficiency among young children and children ages 1-5 (<12 ng/mL)[29] and female children, adolescents, adults, pregnant females, and lactating females ages 12-49 years (<15 ng/mL)[29] using NHANES 2017-March 2020 Prepandemic

- By age in years (1-5)
- By age in years (12-19, 20-49) and sex (female)
- By pregnancy and lactation life stages (females ages 20-44 years)

Folate

Prevalence of low folate (RBC) concentration (<95 ng/mL)[29] among young children, children, adolescents, adults, older adults, pregnant females, and lactating females ages 1 year and older using NHANES 2017-March 2020 Prepandemic

- By age in years (1-5, 6-11, 12-19, 20-39, 40-59, 60+)
- By pregnancy and lactation life stages (20-44 years)
- By sex

Prevalence of low serum folate concentration (<2 ng/mL)[29] among young children, children, adolescents, adults, older adults, pregnant females, and lactating females ages 1 year and older using NHANES 2017-March 2020 Prepandemic

- By age in years (1-5, 6-11, 12-19, 20-39, 40-59, 60+)
- By pregnancy and lactation life stages (females ages 20-44 years)

Vitamin A

Prevalence of serum vitamin A deficiency (<20 µg/dL)[29] among children, adolescents, and female adults ages 6-59 years using NHANES 2017-2018

- By age in years (6-11, 12-19)
- By age in years (20-59) and sex (female)

Vitamin C

Prevalence of serum vitamin C deficiency (<11.4 µmol/L)[29] among children, adolescents, adults, and older adults ages 6 years and older using NHANES 2017-2018

- By age in years (6-11, 12-19, 20-39, 40-59, 60+)
- By age in years (6-11, 12-19, 20-39, 40-59, 60+) and sex

Vitamin D

Prevalence of vitamin D concentration at risk of deficiency (serum 25-hydroxyvitamin D <30 nmol/L)[16, 29] among young children, children, adolescents, adults, older adults, pregnant females, and lactating females ages 1 year and older using NHANES 2017-2018

- By age in years (1-5, 6-11, 12-19, 20-39, 40-59, 60+) and sex
- By pregnancy and lactation life stages (females ages 20-44 years)

Vitamin E

Prevalence (in percent) of serum vitamin E deficiency (<500 µg/dL)[29] among children, adolescents, adults, and older adults ages 6 years and older using NHANES 2017-2018

- By age in years (6-11, 12-19, 20-39, 40-59, 60+)
- By age in years (6-11, 12-19, 20-39, 40-59, 60+) and sex

Additional analyses requested by the Committee

Subsequent analyses may be requested by the Committee to answer the data analysis questions, provide complementary evidence for the systematic review or food pattern modeling scientific questions, and/or incorporate health equity considerations. Any future additions to the analysis topics or population subgroups will be noted.

Amendments

The first version of this plan was published in June 2023. This revised version was published in February 2024. Amendments are described and documented in **Table 2**.

Table 2. Data analysis plan amendments

Date	Plan change	Description
February 2024	2025 Analyses	Three new demographic variables (food security category, household SNAP participation – currently receiving and received in the last 12 months, and child WIC participation – currently receiving) were incorporated for selected new analyses. Published and new analyses lists were updated to reflect more recent data years or publications that are now available.
February 2024	Working definitions for analyses	The working definition for food groups and subcomponents was updated to utilize existing FPED components and subcomponents.
February 2024	Editorial	Editorial changes were included in this protocol to provide clarity to the reader.

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