DESCRIBE AND EVALUATE CURRENT INTAKES OF FOOD GROUPS AND NUTRIENTS: DATA ANALYSIS PROTOCOL

This document describes the protocol for data analysis to address the following question: Describe and evaluate current intakes of food groups and nutrients.

This data analysis is being conducted by the 2020 Dietary Guidelines Advisory Committee, Data Analysis and Food Pattern Modeling Cross-Cutting Working Group, with support from a federal interagency data analysis team (DAT).

This document includes details about the methodology as it will be applied to the data analysis as follows:

• The analytic framework (p. 2) describes the overall scope of the question and approach used to describe food group and nutrient intakes
• The analytic plan (p. 4) details the data and subsequent included analyses
• The analysis results (p. 10) includes reports that describe the analytic methods and summarize results (e.g. data tables and figures)

This protocol is up-to-date as of: 09/19/2019.

This version of the protocol contains updates to the following sections. These changes do not reflect a substantive change in the intent or conduct of the analyses.

• The life stage for infants and toddlers is specified as birth to less than 24 months in the analytic framework.
• Specificity added to age groupings and population subgroups in the analytic plan.
• Changes in average nutrient intakes from food and beverage was added to the analytic plan for adults and older adults to be consistent across life stages.
ANALYTIC FRAMEWORK

The analytic framework describes the overall scope of the analyses, including the population and type of analyses and data sources identified to answer the question. It also includes the definitions of key terms.

**Question:** Describe and evaluate current intakes of food groups and nutrients.

Food group intakes will be described and evaluated in the following ways:
- Mean intakes of food groups and subgroups
- Usual intake distributions of food groups and subgroups
- Food category sources of food group intakes
- Current food group intakes compared to existing food group recommendations
- Changes in food group intakes over time

Nutrient intakes will be described and evaluated in the following ways:
- Mean intakes of nutrients from foods and beverages
- Mean intakes of nutrients from foods, beverages and dietary supplements
- Usual intake distribution of nutrients from foods and beverage
- Usual intake distribution of nutrients from foods, beverages and dietary supplements
- Current nutrient intakes from foods and beverage compared to Dietary Reference Intakes
- Food category sources of nutrient intakes, limited to nutrients of public health concern
- Changes in nutrient intakes over time, limited to nutrients of public health concern

**Population:** Nationally representative sample of the U.S. population.

**Life stages:**
- Infants and toddlers (birth to <24 months)
- Children and adolescents (ages 2-19 years)
- Adults (ages 20-64 years)
- Pregnant Women
- Lactating Women
- Older Adults (ages 65 years and older)

**NOTE:** Exceptions to age groupings will be specified.

**Demographic subgroups:**
- Sex
- Race-ethnicity
- Indicators of socioeconomic status

**Data Source:**
What We Eat in America, National Health and Nutrition Examination Survey (WWEIA, NHANES); cross-sectional, nationally representative dietary intake data.

**Data years:**
The most recent cycle of WWEIA, NHANES data collected in 2015-2016 will be the most current data available for consideration by the Committee. For some analyses, multiple cycles of data will be combined to describe “current” intakes (e.g. 2013-2016).

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1 USDA Food Patterns Summary Table, 2015-2020 Dietary Guidelines for Americans: [https://fns-prod.azureedge.net/sites/default/files/usda_food_patterns/USDAFoodPatternsSummaryTable.pdf](https://fns-prod.azureedge.net/sites/default/files/usda_food_patterns/USDAFoodPatternsSummaryTable.pdf)


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For analyses looking at change in dietary intake over time: the WWEIA 2003-2004 cycle will serve as the years for comparison. Exceptions to these data years will be noted.

**Key definitions:**

**Stage of life:** The age groups defined by the NHANES sampling weights or by the DRI age-sex groups.

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

Food Group Intakes

The following analyses will be used to describe and evaluate current food group intakes in the U.S. population for each life-stage:

**Birth to less than 24 months**

*The analytic plan for infants and toddlers is still in discussion.*

**Children (2-19 years)**

Population average intakes of food groups and subgroups among U.S. Children ages 2-19 years using WWEIA, NHANES, 2015-2016

- by Sex and Age
- by Race/Ethnicity and Age
- by Family Income in Dollars and Age
- by Family Income as % of Poverty Level and Age

Population usual intake distributions of food groups and subgroups among U.S. Children ages 2-19 years using WWEIA, NHANES 2013-2016

- by Sex and Age

Percent of the U.S. population of children (ages 2-19 years) that meets food group recommendations in the currently available USDA Food Patterns using WWEIA, NHANES 2013-2016

- by Sex and Age

Changes in average food group intakes among U.S. Children ages 2-19 years between WWEIA, NHANES 2003-2004 and 2015-2016

WWEIA Food Category Sources of food group intakes among U.S. Children ages 2-19 years, WWEIA, NHANES 2013-2016

**Adults (20-64 years)**

Population average intakes of food groups and subgroups among U.S. Adults ages 20-69 years using WWEIA, NHANES, 2015-2016

- by Sex and Age
- by Race/Ethnicity and Age
- by Family Income in Dollars and Age
- by Family Income as % of Poverty Level and Age

Population usual intake distributions of food groups and subgroups among U.S. Adults ages 20-70 years using WWEIA, NHANES 2013-2016

- by Sex and Age

Percent of the U.S. population of adults (ages 20-70 years) that meets food group recommendations in the currently available USDA Food Patterns using WWEIA, NHANES 2013-2016

- by Sex and Age
Adults (20-64 years) continued.

Changes in average food group intakes among U.S. Adults ages 20-64 years between WWEIA, NHANES 2003-2004 and 2015-2016

WWEIA Food Category Sources of food group intakes among U.S. Adults ages 20-71 years, WWEIA, NHANES 2013-2015

Older Adults (65 years and older)

Population average intakes of food groups and subgroups among U.S. Older Adults ages 70 years and older using WWEIA, NHANES, 2015-2016

- by Sex and Age
- by Race/Ethnicity and Age
- by Family Income in Dollars and Age
- by Family Income as % of Poverty Level and Age

Population usual intake distributions of food groups and subgroups among U.S. Older Adults ages 71 years and older using WWEIA, NHANES 2013-2016

- by Sex and Age

Percent of the U.S. population of Older Adults ages 71 years and older that meets food group recommendations in the currently available USDA Food Patterns using WWEIA, NHANES 2013-2016

- by Sex and Age

Changes in average food group intakes among U.S. older adults ages 65 years and older between WWEIA, NHANES 2003-2004 and 2015-2016

WWEIA Food Category Sources of food group intakes among U.S. Older Adults ages 71 years and older, WWEIA, NHANES 2013-2016

Pregnant Women

Population average intakes of food groups and subgroups among pregnant women in the U.S. using WWEIA, NHANES, 2015-2016

Population usual intake distributions of food groups and subgroups among pregnant women in the U.S. using WWEIA, NHANES 2013-2016

Changes in average food group intakes among pregnant women in the U.S. between WWEIA, NHANES 2003-2004 and 2015-2016

WWEIA Food Category Sources of food group intakes among pregnant women in the U.S. using WWEIA, NHANES 2013-2016
## Lactating Women

Population average intakes of food groups and subgroups among lactating women in the U.S. using WWEIA, NHANES, 2013-2016

Population usual intake distributions of food groups and subgroups among lactating women in the U.S. using WWEIA, NHANES 2013-2016

Changes in average food group intakes among lactating women in the U.S. between WWEIA, NHANES 2003-2004 and 2015-2016

WWEIA Food Category Sources of food group intakes among lactating women in the U.S. using WWEIA, NHANES 2013-2016
Nutrient Intakes

To describe and evaluate current nutrient intakes in the U.S. population for each life-stage, analysis will quantify intakes of nutrients from food and beverage using WWEIA, NHANES dietary recall data and corresponding nutrient values from the USDA Food and Nutrient Database for Dietary Studies through the following analyses:

Birth to 11 months

*The analytic plan for infants and toddlers is still in discussion.*

Children ages 1-18 years

Population average nutrient intakes from food and beverage among U.S. Children ages 1-18 years using WWEIA, NHANES 2015-2016
- by Sex and Age
- by Race/Ethnicity and Age
- by Family Income in Dollars and Age
- by Family Income as % of Poverty Level and Age

Population average nutrient intakes from food and beverage and dietary supplements among U.S. Children ages 1-18 years using WWEIA, NHANES 2015-2016
- by Sex and Age

Population usual nutrient intake distributions from food and beverage among U.S. Children ages 1-18 years using WWEIA, NHANES 2013-2016
- by Race/Ethnicity and Age
- by Family Income as % of Poverty Level and Age

Population usual nutrient intake distributions from food and beverage and dietary supplements among U.S. Children ages 1-18 years using WWEIA, NHANES 2013-2016
- by Sex and Age

Comparison of nutrient intakes in the U.S. population of children ages 1-18 years to Dietary Reference Intakes
- by Sex and Age

Changes in population average intakes of nutrients from foods and beverages between 2009-2010 and 2015-2016 among U.S. Children ages 1-18 years, limited to nutrients of public health concern
- by Sex and Age

WWEIA Food Category Sources of nutrients among U.S. Children ages 1-18 years, WWEIA, NHANES 2013-2016, limited to nutrients of public health concern
- by Sex and Age
Adults and Older Adults ages 19 years and older

Population average nutrient intakes from food and beverage among U.S. Adults ages 20 years and older using WWEIA, NHANES 2015-2016
- by Sex and Age
- by Race/Ethnicity and Age
- by Family Income in Dollars and Age
- by Family Income as % of Poverty Level and Age

Population average nutrient intakes from food and beverage and dietary supplements among U.S. Adults ages 20 years and older using WWEIA, NHANES 2015-2016
- by Sex and Age

Population usual nutrient intake distributions from food and beverage among U.S. Adults ages 19 years and older using WWEIA, NHANES 2013-2016
- by Sex and Age

Population usual nutrient intake distributions from food and beverage and dietary supplements among U.S. Adults ages 19 years and older using WWEIA, NHANES 2013-2016
- by Sex and Age

Comparison of nutrient intakes in the U.S. population of adults ages 19 years and older to Dietary Reference Intakes
- by Sex and Age

Changes in population average nutrient intake from foods and beverages between 2009-2010 and 2015-2016 among U.S. Adults ages 20 years and older, limited to nutrients of public health concern
- by Sex and Age

WWEIA Food Category Sources of nutrients among U.S. Adults ages 19 years and older, WWEIA, NHANES 2013-2016, limited to nutrients of public health concern
- by Sex and Age

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3 Due to age grouping differences by NHANES sampling driven age groups and the age-sex groups used in the Dietary Reference intakes, adults and older adults are presented together. The ages grouping for each analysis are noted.

Question: Describe and evaluate current intakes of food groups and nutrients.
**Pregnant Women**

- Population average nutrient intakes from food and beverage among pregnant women in the U.S. using WWEIA, NHANES 2013-2016
- Population average nutrient intakes from food and beverage and dietary supplements among pregnant women in the U.S. using WWEIA, NHANES 2013-2016
- Population usual nutrient intake distributions from food and beverage among pregnant women in the U.S. using WWEIA, NHANES 2013-2016
- Population usual nutrient intake distributions from food and beverage and dietary supplements among pregnant women in the U.S. using WWEIA, NHANES 2013-2016
- Comparison of nutrient intakes in the U.S. population of pregnant women to Dietary Reference Intakes
  - WWEIA Food Category Sources of nutrients among pregnant women in the U.S., WWEIA, NHANES 2013-2016, limited to nutrients of public health concern

**Lactating Women**

- Population average nutrient intakes from food and beverage among lactating women in the U.S. using WWEIA, NHANES 2013-2016
- Population average nutrient intakes from food and beverage and dietary supplements among lactating women in the U.S. using WWEIA, NHANES 2013-2016
- Population usual nutrient intake distributions from food and beverage among lactating women in the U.S. using WWEIA, NHANES 2013-2016
- Population usual nutrient intake distributions from food and beverage and dietary supplements among lactating women in the U.S. using WWEIA, NHANES 2013-2016
- Comparison of nutrient intakes in the U.S. population of lactating women to Dietary Reference Intakes
  - WWEIA Food Category Sources of nutrients among lactating women in the U.S., WWEIA, NHANES 2013-2016, limited to nutrients of public health concern
ANALYSIS RESULTS

This protocol will be updated with the links to the methods and results for each analysis used to describe and evaluate food group and nutrient intakes after the analytic plan has been finalized and implemented.

Question: Describe and evaluate current intakes of food groups and nutrients.