



# Data Analysis

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# Purpose

A collection of analyses from nationally representative, federal data sources will provide insights into eating habits and diet-related chronic disease rates in the United States.

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# Federal Data Sources

- National Health and Nutrition Examination Survey (NHANES)
- NHANES, What We Eat in America
  - USDA Food and Nutrient Database for Dietary Studies (FNDDS)
  - USDA Food Pattern Equivalents Database (FPED)
- National Health Interview Survey (NHIS)
- Surveillance, Epidemiology and End Results (SEER)



# NHANES Goals

National Center for Health Statistics of the Centers for Disease Control and Prevention

- US population-based estimates of:
  - Health conditions
  - Awareness, treatment and control of selected diseases
  - Environmental exposures
  - Nutrition status and diet behaviors
- Establish and maintain a biospecimen program





# History of Data Collection

Survey	Dates	Ages
NHANES	1999 – 2000	All ages
NHANES	2001 – 2002	All ages
NHANES	2003 – 2004	All ages
NHANES	2005 – 2006	All ages
NHANES	2007 – 2008	All ages
NHANES	2009 – 2010	All ages
NHANES	2011 – 2012	All ages
NHANES	2013 – 2014	All ages
<b>NHANES</b>	<b>2015 – 2016</b>	<b>All ages</b>
<b>NHANES</b>	<b>2017 – 2018</b>	<b>All ages</b>
<b>NHANES</b>	<b>2019 – 2020</b>	<b>All ages</b>

# History of Data Collection

Survey	Dates	Ages
NHANES	1999 – 2000	All ages
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NHANES	2007 – 2008	All ages
NHANES	2009 – 2010	All ages
NHANES	2011 – 2012	All ages
NHANES	2013 – 2014	All ages
NHANES	2015 – 2016	All ages
NHANES	2017 – 2018	All ages
NHANES	2019 – 2020	All ages

# NHANES Sampling Design

- Nationally representative
- Civilian, non-institutionalized US population
- 5,000 individuals examined annually

## **Oversampled groups:**

Non-Hispanic blacks

Non-Hispanic Asians

Hispanics

80+ years of age

Low income whites



# NHANES Data Release Process

- Data release process
  - Quality control
  - Editing/cleanup
  - Weighting
  - Data preparation
  - Documentation
  - Confidentiality review
- Public data released in 2-year cycles





# NHANES Data Collection

- In-person home interview
- Physical assessments in Mobile Exam Centers (MEC)
  - Physical exam measurements
  - Specialized testing
  - Lab specimen collection
  - 24 hour dietary recall interview (in person)
- Post exam assessments
  - Long term assessments (e.g. physical activity monitoring)
  - 24 hour dietary recall interview (phone)



# Diet Related Chronic Disease

## NHANES Laboratory Tests

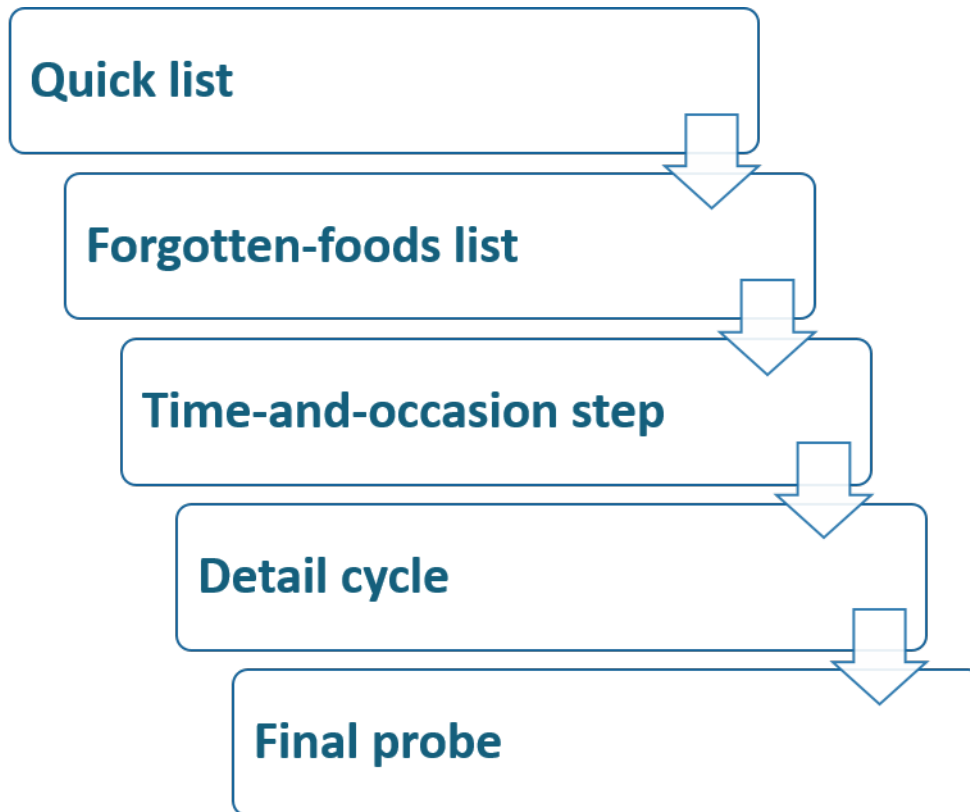
- Nutritional biomarkers
- Diabetes
- Lipid profile
- Biochemistry profile



# NHANES, What We Eat In America

Interview administered 24-hour dietary recall

## USDA Automated Multiple Pass Method



Dietary  
Guidelines  
for Americans

# WWEIA Supporting Data from USDA

## FNDDS

### Food and Nutrient Database for Dietary Studies

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- Nutrient values for ~9000 foods and beverages
- Energy and 64 nutrients

## FPED

### Food Patterns Equivalents Database

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- Converts foods and beverages in FNDDS into food group components
- 37 USDA Food Patterns components

## WWEIA Food Categories

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- Foods and beverages as consumed in the American diet
- ~ 150 unique food categories

# National Health Interview Survey (NHIS)

## Major Health Topics Addressed

- Physical and mental health status
- Chronic conditions, including asthma and diabetes
- Access to and use of health care services
- Health insurance coverage and type of coverage
- Health-related behaviors, including smoking, alcohol use, and physical activity
- Measures of functioning and disability
- Immunizations

National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention (CDC).



# Surveillance, Epidemiology and End Results (SEER)

## Diet related cancer statistics

- Trends in cancer incidence
- Trends in cancer deaths

Surveillance Research Program (SRP) in the National Cancer Institute's Division of Cancer Control and Population Sciences (DCCPS).





# Data Analysis Team

Federal scientists with advanced degrees in nutrition, statistics and epidemiology

## TusaRebecca Pannucci, PhD, MPH, RD

- Naman Ahluwalia, PhD, DSc (CDC)
- Jill Reedy, PhD, MPH, RD (NIH)
- Jaspreet Ahuja (ARS)
- Merissa Shams-White, PhD (NIH)
- Kevin Kuczynski, MS, RD (CNPP)
- Cheyenne Swanson, MS (CNPP)
- Alanna Moshfegh, PhD (ARS)
- Edwina Wambogo, PhD, MPH, RD (NIH)
- Melissa Nickle, MS (ARS)
- *Others*
- Cynthia Ogden, PhD (CDC)



# Advisory Committee

## Relevant Topics & Questions

### Across the life span...

- Current dietary patterns and beverage consumption
- Current intakes of food groups and nutrients
- Nutrients of public health concern
- Prevalence of nutrition-related chronic health conditions
- Dietary intake across life stages
- Relationship between frequency of eating and achieving nutrient and food group recommendations
- Relationship between added sugars consumption and achieving nutrient and food group recommendations



# Transparency in Data Analysis


DietaryGuidelines.gov

## Follow Along

Protocols developed

Analytic methods

Draft Conclusions



Dietary  
Guidelines  
for Americans

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Work Under Way

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### Topics and Questions to be Examined by the Committee

Still to Come ☐ Developing the Plan ☐ Implementing the Plan ☒ Draft Conclusion ☐

Dietary Patterns	
Status	All ages
<input type="checkbox"/>	1. What is the relationship between dietary patterns consumed at each stage of life and growth, size, body composition, and risk of overweight and obesity?
<input type="checkbox"/>	2. What is the relationship between dietary patterns consumed at each stage of life and risk of cardiovascular disease?
<input type="checkbox"/>	3. What is the relationship between dietary patterns consumed at each stage of life and risk of type 2 diabetes?
<input type="checkbox"/>	4. What is the relationship between dietary patterns consumed at each stage of life and risk of certain types of cancer?
<input type="checkbox"/>	5. What is the relationship between dietary patterns consumed at each stage of life and bone health?
<input type="checkbox"/>	6. What is the relationship between dietary patterns consumed at each stage of life and neurocognitive health?
<input type="checkbox"/>	7. What is the relationship between dietary patterns consumed at each stage of life and sarcopenia?
<input type="checkbox"/>	8. What is the relationship between dietary patterns consumed at each stage of life and all-cause mortality?
	<b>Pregnancy and lactation</b>
<input type="checkbox"/>	9. What is the relationship between dietary patterns consumed during pregnancy and risk of gestational diabetes?
<input type="checkbox"/>	10. What is the relationship between dietary patterns consumed during pregnancy and risk of hypertensive disorders during pregnancy?



# Dietary Guidelines for Americans

