
Tools of a Healthy Diet

Module 2





Objectives

1. Review a few concepts from last week
2. Federal food labeling
 - Explain the different components that make up dietary reference intakes, or DRIs.
 - Understand how to use these DRIs and daily values found on a nutrition facts panel.
 - Describe what information is permitted on a nutrition facts panel.
3. Dietary Guidelines for Americans and MyPlate
 - Describe the Dietary Guidelines for Americans and the diseases they are intended to prevent or minimize.
 - Understand the MyPlate food groupings and plan a diet using MyPlate recommendations and the concept of energy density.
 - Evaluate the claims made on food labels.

Nutrition Is...

The science that links foods to health and disease. It includes digestion, absorption, transportation, and excretion of food substances and waste products.



Six in ten adults in the US have a chronic disease and **four in ten adults** have two or more.



HEART
DISEASE



CANCER



CHRONIC LUNG
DISEASE



STROKE



ALZHEIMER'S
DISEASE



DIABETES



CHRONIC
KIDNEY DISEASE



	Low-carbohydrate	Low-fat/ vegetarian/vegan	Low-glycemic	Mediterranean	Mixed/balanced	Paleolithic
Health benefits relate to:	Emphasis on restriction of refined starches and added sugars in particular.	Emphasis on plant foods direct from nature; avoidance of harmful fats.	Restriction of starches, added sugars; high fiber intake.	Foods direct from nature; mostly plants; emphasis on healthful oils, notably monounsaturates.	Minimization of highly processed, energy-dense foods; emphasis on wholesome foods in moderate quantities.	Minimization of processed foods. Emphasis on natural plant foods and lean meats.
Compatible elements:	Limited refined starches, added sugars, processed foods; limited intake of certain fats; emphasis on whole plant foods, with or without lean meats, fish, poultry, seafood.					
And all potentially consistent with:	Food, not too much, mostly plants^{a,b,c}.					

^aFrom Reference 135.

^bPortion control may be facilitated by choosing better-quality foods which have the tendency to promote satiety with fewer calories.

^cWhile neither the low-carbohydrate nor Paleolithic diet need be "mostly plants," both can be.

 Katz DL, Meller S. 2014.

Annu. Rev. Public Health. 35:83–103



The Six Classes of Nutrients

- **Macronutrients provide calories**
 - Needed in gram quantities in a diet.
 - *Carbohydrates*
 - *Protein*
 - *Lipids/Fat*
- **Micronutrients do not provide calories**
 - Needed in milligram or microgram quantities in a diet.
 - *Vitamins*
 - *Minerals*
- **Water**

Label Sample Calculation

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WHOLE WHEAT BREAD

Nutrition Facts

Serving Size 1 slice (36g)

Servings Per Container 19

Amount Per Serving

Calories 80

Calories from Fat 10

% Daily Value*

Total Fat 1g

2%

% Daily Value*

Saturated Fat 0g

0%

Trans Fat less than 1g

Cholesterol 0mg

0%

Sodium 200mg

8%

Vitamin A 0%

Vitamin C 0%

Calcium 0%

Iron 4%

*Percent Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

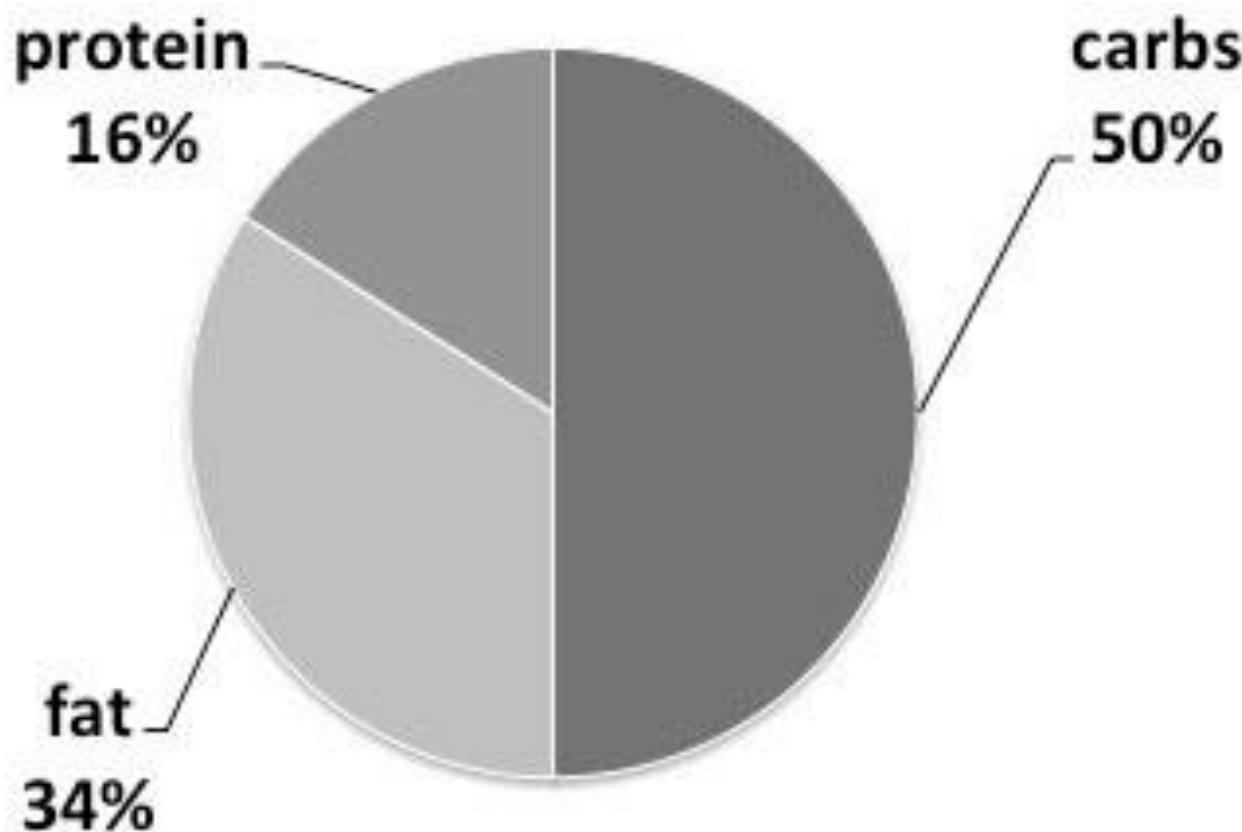
		Calories: 2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

INGREDIENTS: WHOLE WHEAT, WATER, ENRICHED WHEAT FLOUR [FLOUR, MALTED BARLEY, NIACIN, REDUCED IRON, THIAMINE MONONITRATE (VITAMIN B1) AND RIBOFLAVIN (VITAMIN B2)], CORN SYRUP, PARTIALLY HYDROGENATED COTTONSEED OIL, SALT, YEAST.

** Intake of *trans* fat should be as low as possible.

- Based on carbohydrate, fat, and protein content:
 - A serving of Whole Wheat Bread contains 81 kcal ($[15 \times 4] + [1 \times 9] + [3 \times 4] = 81$).
 - The label lists 80, suggesting that the calorie value was rounded down.

Macronutrient Distribution Standard American Diet



Macros Don't Tell the Whole Story

- Problems with SAD
- Too many calories overall
- much saturated fat
- Primarily refined carbohydrates like sugar, desserts, white flour-based products
- Too much animal protein, not enough plant-based protein





How do you design a healthy diet?

A Philosophy That Works

- **Quantity:** Control how much you eat
- **Quality:** Pay attention to what you eat: choose whole grains, fruits, and vegetable
- **Activity:** Stay physically active

There are **no exclusively “good” or “bad” foods (TRUE or FALSE)**



Variety Means Eating Many Different Foods

- No one food meets all nutrient needs
- Eat a variety of whole foods for nutrient diversity
 - Grains
 - Fruits
 - Protein
 - Vegetables
 - Dairy



Balance Means Eating More Nutrient-Dense Foods

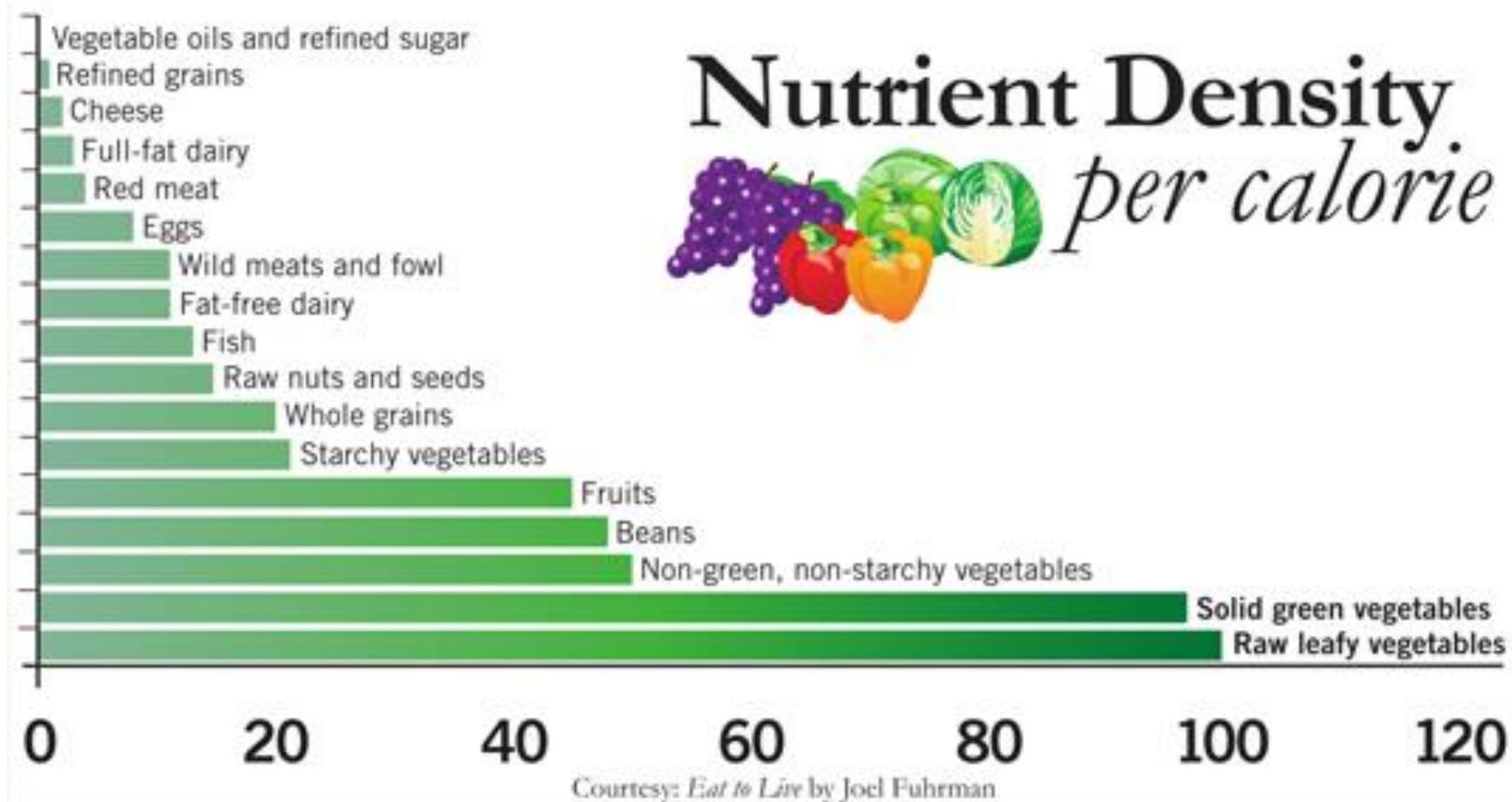
- Balance
 - Eat more nutrient-dense foods and beverages such as fruit, vegetables, whole grains, legumes (beans), seafood
 - Eat less foods high in saturated and trans fat, sugars, cholesterol, salt, and alcohol (empty calories)
 - Match your energy intake with energy expenditure





What is nutrient density?

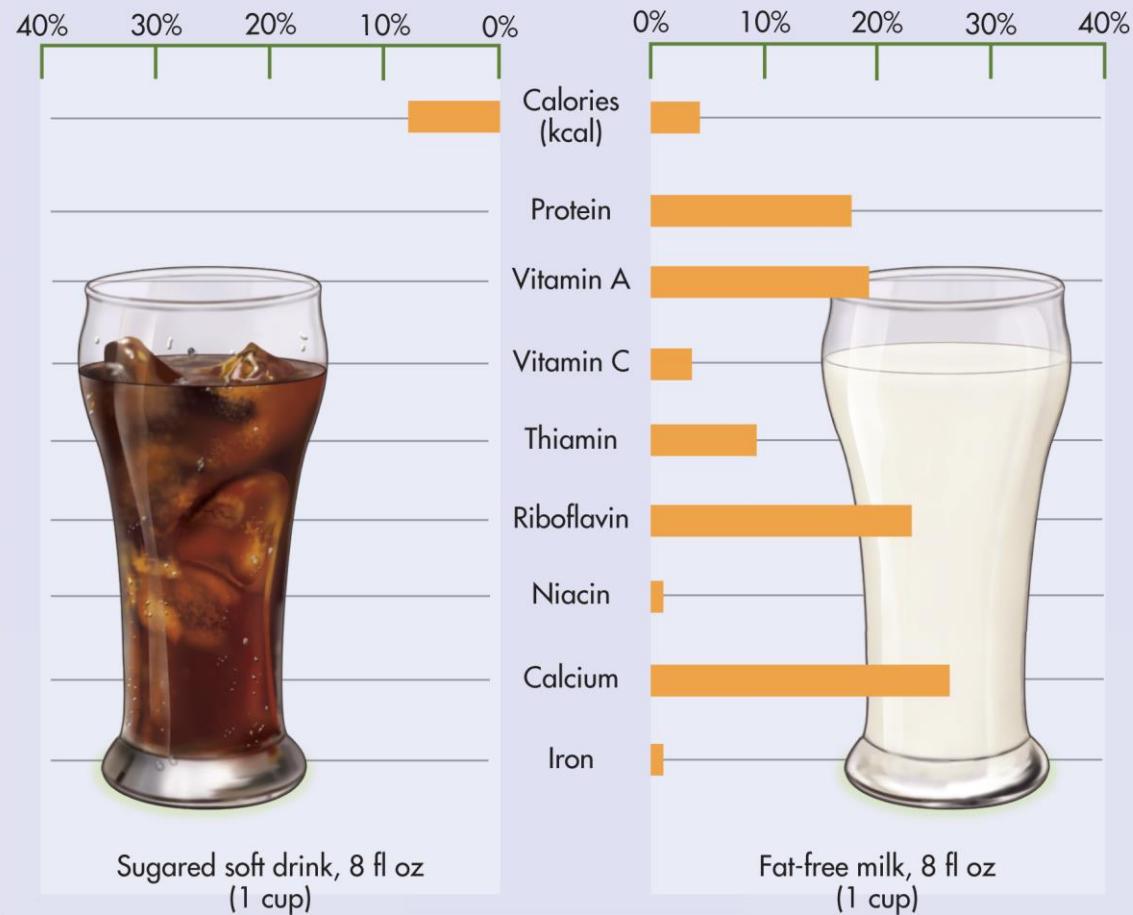
Derived by dividing a food's nutrient content by its calorie content



Low vs high nutrient density

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Percent Contribution to Adolescent Female Nutrient Requirements



Functional Foods

Provide health benefits beyond those supplied by the traditional nutrients they contain



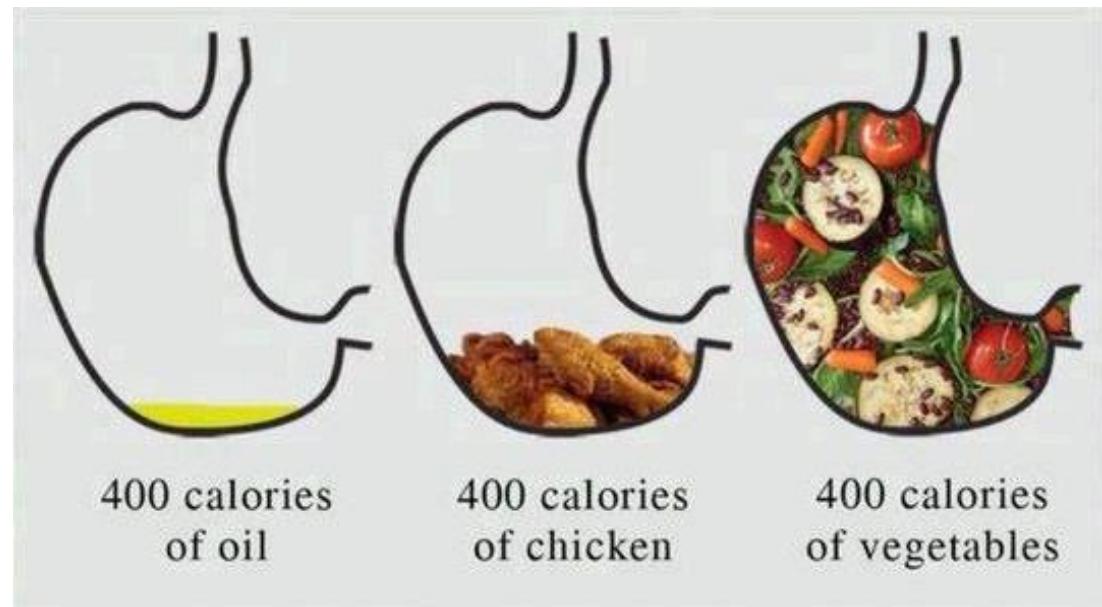


Moderation

- Takes into account portion size and nutrient needs
- Pay attention to portion sizes and planning your day's diet so that you do not over consume any nutrients

Energy Density

- Energy density of a food is determined by comparing the calorie (kcal) content with the weight of food



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TABLE 2-2 ► Energy Density of Common Foods (Listed in Relative Order)

Very Low Energy Density (less than 0.6 kcal per gram)	Low Energy Density (0.6 to 1.5 kcal per gram)	Medium Energy Density (1.5 to 4 kcal per gram)	High Energy Density (greater than 4 kcal per gram)
Lettuce	Whole milk	Eggs	Graham crackers
Tomatoes	Oatmeal	Ham	Fat-free sandwich cookies
Strawberries	Cottage cheese	Pumpkin pie	Chocolate
Broccoli	Beans	Whole-wheat bread	Chocolate chip cookies
Salsa	Bananas	Bagels	Tortilla chips
Grapefruit	Broiled fish	White bread	Bacon
Fat-free milk	Fat-free yogurt	Raisins	Potato chips
Carrots	Ready-to-eat breakfast cereals with 1% low-fat milk	Cream cheese	Peanuts
Vegetable soup		Cake with frosting	Peanut butter
Celery	Plain baked potato	Rice cakes	Mayonnaise
Cabbage	Cooked rice		Butter or margarine
Melon	Spaghetti noodles		Vegetable oils

Data adapted from Rolls B, *The Ultimate Volumetrics Diet*. New York: HarperCollins, 2012.



1575 Kcal
High Energy Density



1575 Kcal
Low Energy Density

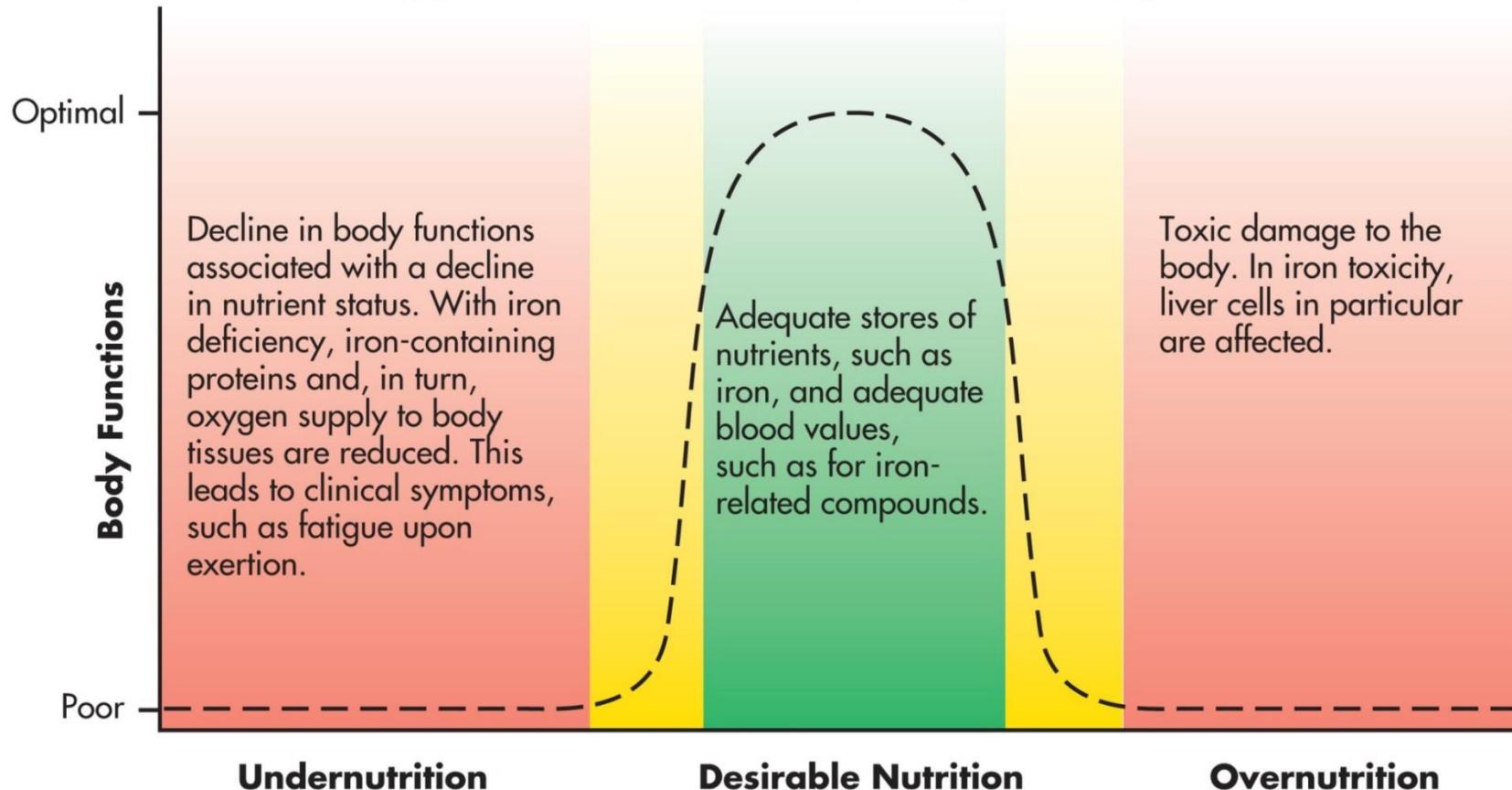
Used with permission from Dr. Barbara Rolls, Penn State University



Let's Hear It: name some energy dense foods

Nutritional Status

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The Dietary Guidelines

About the *Dietary Guidelines for Americans*

- The *Dietary Guidelines* provides science-based advice on what to eat and drink to promote health, help reduce risk of chronic disease, and meet nutrient needs.
- Serves as the cornerstone of federal nutrition programs and policies.
- Mandated to reflect the preponderance of scientific evidence, and published jointly by USDA and HHS every five years.
- Written for a professional audience, including policymakers, healthcare professionals, nutrition educators, and federal nutrition program operators.

The Guidelines



Key Dietary Principles

- Meet nutritional needs primarily from foods and beverages
- Choose a variety of options from each food group
- Pay attention to portion size





What is a Dietary Pattern?

- Represents the totality of what individuals habitually eat and drink.
- The parts of the pattern act synergistically to affect health.
- May better predict overall health status and disease risk than individual foods or nutrients.
- A healthy dietary pattern consists of nutrient-dense forms of foods and beverages across all food groups, in recommended amounts, and within calorie limits.



USDA Dietary Patterns

- The primary USDA Dietary Pattern is the **Healthy U.S.-Style Dietary Pattern**, which provides a framework for healthy eating that all Americans can follow.
 - Based on the types and proportions of foods typically consumed, but in nutrient-dense forms and appropriate amounts.
- Variations of the **Healthy U.S-Style Dietary Pattern** that have the same core elements include:
 - **Healthy Mediterranean-Style Dietary Pattern**
 - **Healthy Vegetarian Dietary Pattern**



Dietary Intakes Compared to Recommendations



The center (0) line is the goal or limit. For most, those represented by the **dark blue** section of the bars can improve their dietary pattern by shifting toward the center line.

Data Source: Analysis of What We Eat in America, NHANES 2013-2016, ages 1 and older, 2 days dietary intake data, weighted. Recommended Intake Ranges: Healthy U.S.-Style Dietary Patterns



Making Nutrient-Dense Choices: One Meal At a Time

Slight changes to individual parts of a meal can make a big difference. This meal shows examples of small shifts to more nutrient-dense choices that significantly improve the nutritional profile of the meal overall while delivering on taste and satisfaction.



Typical Burrito Bowl Total Calories = 1,120		Nutrient-Dense Burrito Bowl Total Calories = 715
White rice (1½ cups)		Brown rice (1 cup) + Romaine lettuce (½ cup)
Black beans (½ cup)		Black beans, reduced sodium (½ cup)
Chicken cooked with sauce (2 ounces)		Grilled chicken with spice rub (2 ounces)
No grilled vegetables		Added grilled vegetables (½ cup)
Guacamole (½ cup)		Sliced avocado (5 slices)
Jarred salsa (¼ cup)		Fresh salsa/pico de gallo (¼ cup)
Sour cream (¼ cup)		No sour cream
Cheese (½ cup)		Reduced-fat cheese (½ cup)
Jalapeño (5 slices)		Jalapeño (5 slices)
Iced tea with sugar (16 ounces)		Iced tea, no sugar (16 ounces)

MyPlate Consumer Messaging



2020-2025 DGA call to action (“what”)



MyPlate call to action (“how”)

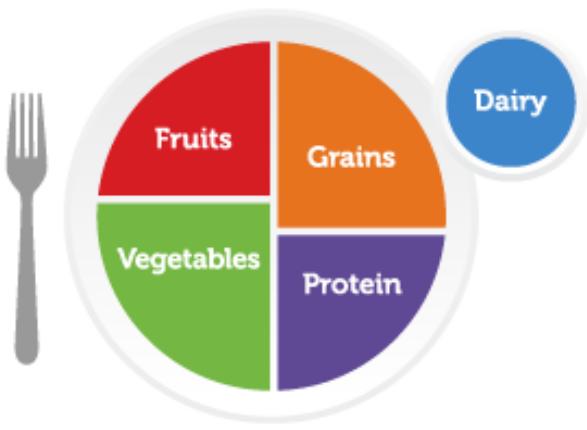
*Make every bite count with
the Dietary Guidelines*

Encourages people to choose foods, beverages, meals that are full of important nutrients



*Start Simple with
MyPlate* inspiration and simple ideas people can incorporate into their busy lives to help them improve their health and well-being over time





MyPlate.gov

Healthy eating is important at every stage of life.

Make half your plate fruits & vegetables.

Focus on whole fruits.

Vary your veggies.



Make half your grains whole grains.

Vary your protein routine.

Move to low-fat or fat-free dairy milk or yogurt (or lactose-free dairy or fortified soy versions).



Choose foods and beverages with less added sugars, saturated fat, and sodium.

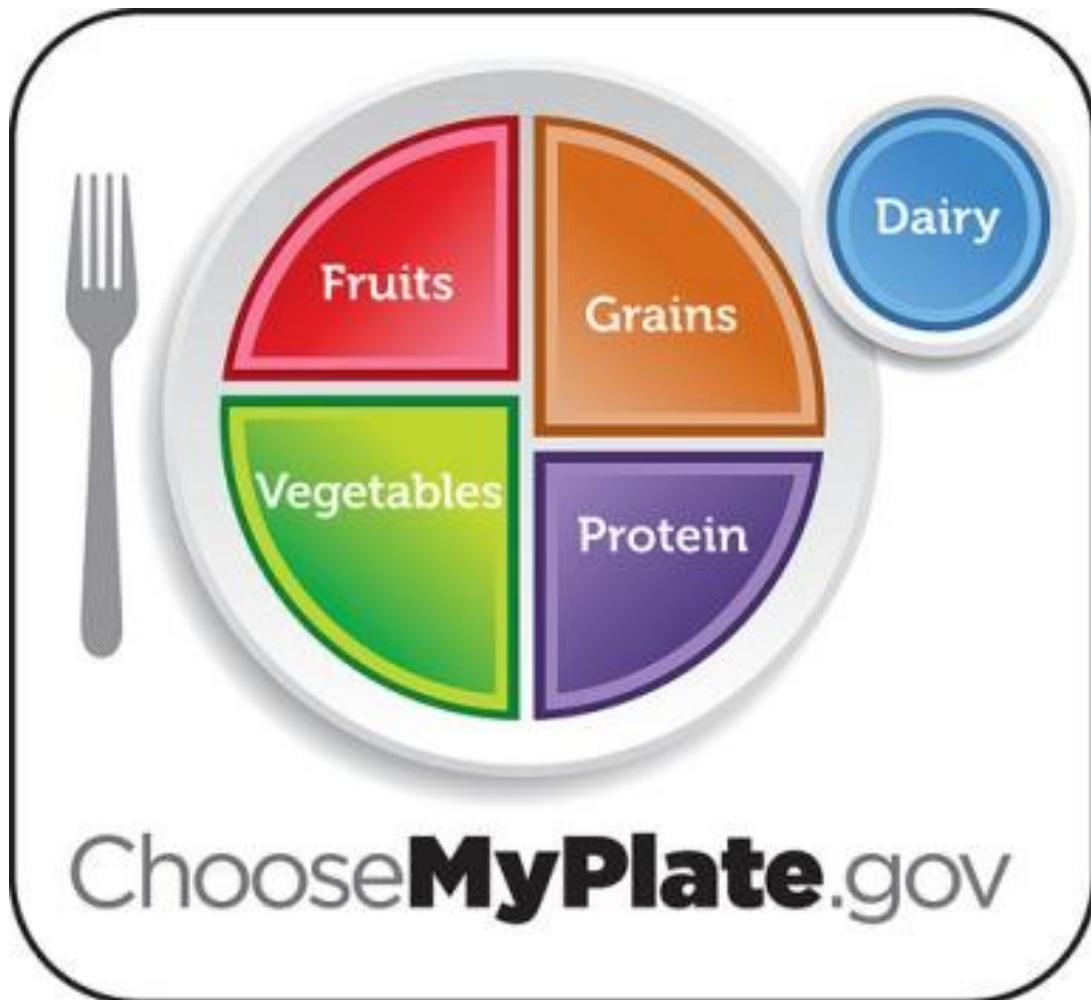
The benefits add up over time, bite by bite.



What do you think
about the plate?

Pros?

Cons?



Physical Activity Guidelines for Americans

U.S. Department of Health and Human Services issued guidance for physical activity



Everyone needs a mix of physical activity during and after pregnancy.

Moderate-intensity aerobic activity

Anything that gets your heart beating faster counts.



AND

Muscle-strengthening activity

Do activities that make your muscles work harder than usual.



Is that more than you can do right now? Start with just **5 minutes**. It all adds up!

Walk. Run. Dance. Play. **What's your move?**





How much physical activity do kids and teens need?

At least 60 minutes every day.

Most of that time can be **moderate-intensity aerobic activity** — anything that gets their heart beating faster counts.

And at least 3 days a week, encourage them to step it up to **vigorous-intensity aerobic activity**, so they're breathing fast and their heart is pounding.



Walk. Run. Dance. Play. **What's your move?**

As part of their daily 60 minutes, kids and teens also need:

Muscle-strengthening activity

at least 3 days a week



AND



Anything that makes their muscles work harder counts — like climbing or swinging on the monkey bars.

Bones need pressure to get stronger. Running, jumping, and other weight-bearing activities all count.



Benefits of Physical Activity

- Improved body composition
 - Fat mass vs muscle mass
- Reduce your risk of
 - Heart disease
 - Type 2 diabetes
 - Metabolic syndrome
 - Some cancers
- Improve
 - Mental health and mood
 - Ability to do daily activities
 - Prevent falls, if you're an older adult
- Increase the odds of living longer

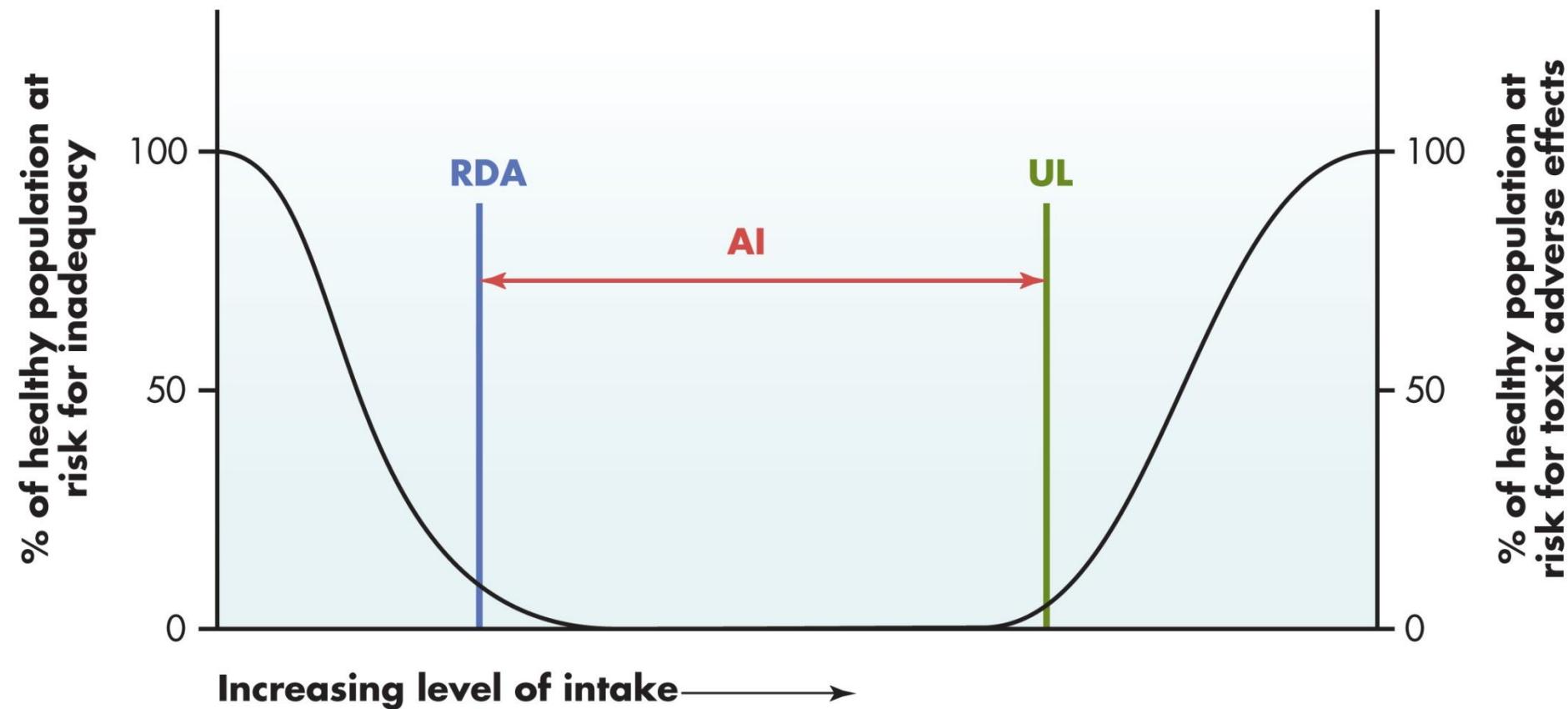




Specific Nutrient Standards & Recommendations

- Dietary Reference Intakes (DRI): term used to encompass nutrient recommendations by the Food and Nutrition Board of the Institute of Medicine.
- Includes:
 - Recommended Dietary Allowances (RDA)
 - Adequate Intakes (AI)
 - Estimated Energy Requirements (EER)
 - Tolerable Upper Intake Levels (Upper Levels or UL)





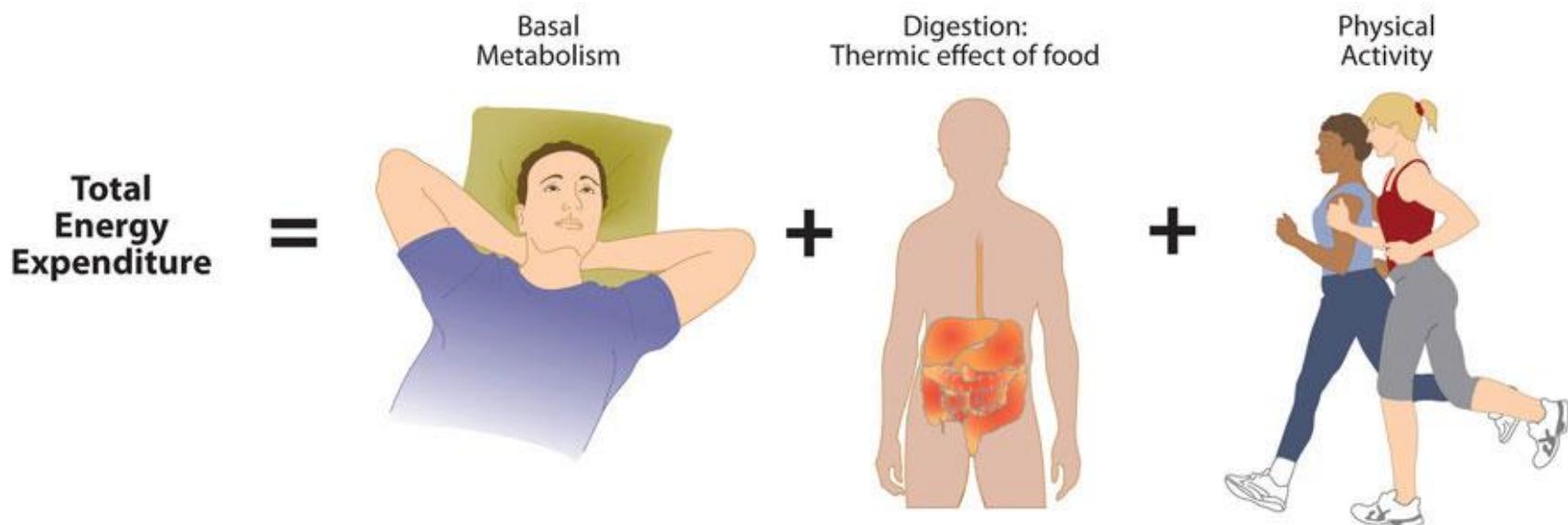
Recommended Dietary Allowance (RDA): The dietary intake level that is sufficient to meet the nutrient requirement of nearly all (97% to 98%) healthy individuals in a particular life stage and gender group. When set for a nutrient, aim for this intake.

Adequate Intake (AI): A recommended intake value based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of healthy people that is assumed to be adequate; used when an RDA cannot be determined. When set for a nutrient, aim for this intake.

Tolerable Upper Intake Level (Upper Level or UL): The highest level of nutrient intake that is likely to pose no risk of adverse health effects for almost all individuals in the general population. As intake increases above the Upper Level, the risk of adverse effects increases.

Estimated Energy Requirement (EER)

- Estimates energy (kcal) intake needed to match the energy use of an average person in a specific life stage
- Considers age, gender, height, weight, and physical activity
- Serves as a starting point for estimating calorie need



Daily Value (DV)

- Daily Value is the nutrient standard used on the Nutrition Facts portion of the food label
- The percent Daily Value for each nutrient is based on consuming a 2000-kcal diet
- Set at or close to the highest RDA value or related nutrient standard
- DVs have been set for vitamins, minerals, protein, other dietary components
- Allow intake comparison from a specific food to desirable (or maximum) intakes



Quick Foods

MICRO Mac®

Nutrient claims, such as "Good source," and health claims, such as "Reduce the risk of osteoporosis," must follow legal definitions.

A diet rich in calcium may reduce the risk of osteoporosis

Good sourceof..... calcium

Nutrients
These nutrients must appear on most labels. Labels of foods that contain few nutrients, such as candy and soft drinks, may omit some nutrients. Some manufacturers list more nutrients. Other nutrients must be listed if manufacturers make a claim about them or if the food is fortified with them.

A Quick Guide to Nutrient Sources

% Daily Value
20% or more = Rich source
10%-19% = Good source

Name and address of the food manufacturer.

Ingredients are listed in descending order by weight.

CWRU - Nutrition

Nutrition Facts

Serving Size 1 Pouch (61g)	
Serving Per Container 6	
Amount Per Serving	
Calories 250	Calories from Fat 70
% Daily value*	
Total Fat 7g	11%
Saturated Fat 2.5g	13%
Trans Fat 1g	**
Cholesterol 5mg	2%
Sodium 400mg	16%
Total Carbohydrate 38g	13%
Dietary Fiber <1g	3%
Sugars 6g	
Protein 7g	
Vitamin A 0% • Vitamin C 0%	
Calcium 12% • Iron 8%	

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

Calories: 2,000	2,500	
Total Fat	Less than 65g	80g
Sat Fat	Less than 20g	25g
Cholest	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carb	300g	375g
Fiber	25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

**Intake should be as low as possible.

INGREDIENTS: ENRICHED MACARONI PRODUCT (DURUM WHEAT FLOUR, GLYCERYL MONOSTEARATE, SALT, NIACIN, FERROUS SULFATE, THIAMIN MONONITRATE [VITAMIN B1], RIBOFLAVIN [VITAMIN B2], FOLIC ACID), CHEESE SAUCE MIX (WHEY, PARTIALLY HYDROGENATED SOYBEAN OIL, MALTODEXTRIN, WHEY PROTEIN CONCENTRATE, CORN SYRUP SOLIDS, SALT, MILKFAT, SUGAR, SODIUM, NATURAL FLAVOR, CITRIC ACID, MONOSODIUM GLUTAMATE, MODIFIED FOOD STARCH, LACTIC ACID, YELLOW 5).

Serving size
Serving size is listed in household units (and grams). Pay careful attention to serving size to know how many servings you are eating: e.g., if you eat double the serving size, you must double the % Daily Values and calories.

Servings per container
The number of servings of the size given in the serving size above that are in one package of the food.

% Daily Value
This shows how a single serving compares to the DV. Recall that the DVs for fat, saturated fat, cholesterol, protein, and fiber are based on a 2000-calorie diet.

Sugars DV
There is no % Daily Value for sugar. Limiting intake is the best advice.

Protein DV
% Daily Value for protein is generally not included due to expensive testing required to determine protein quality.

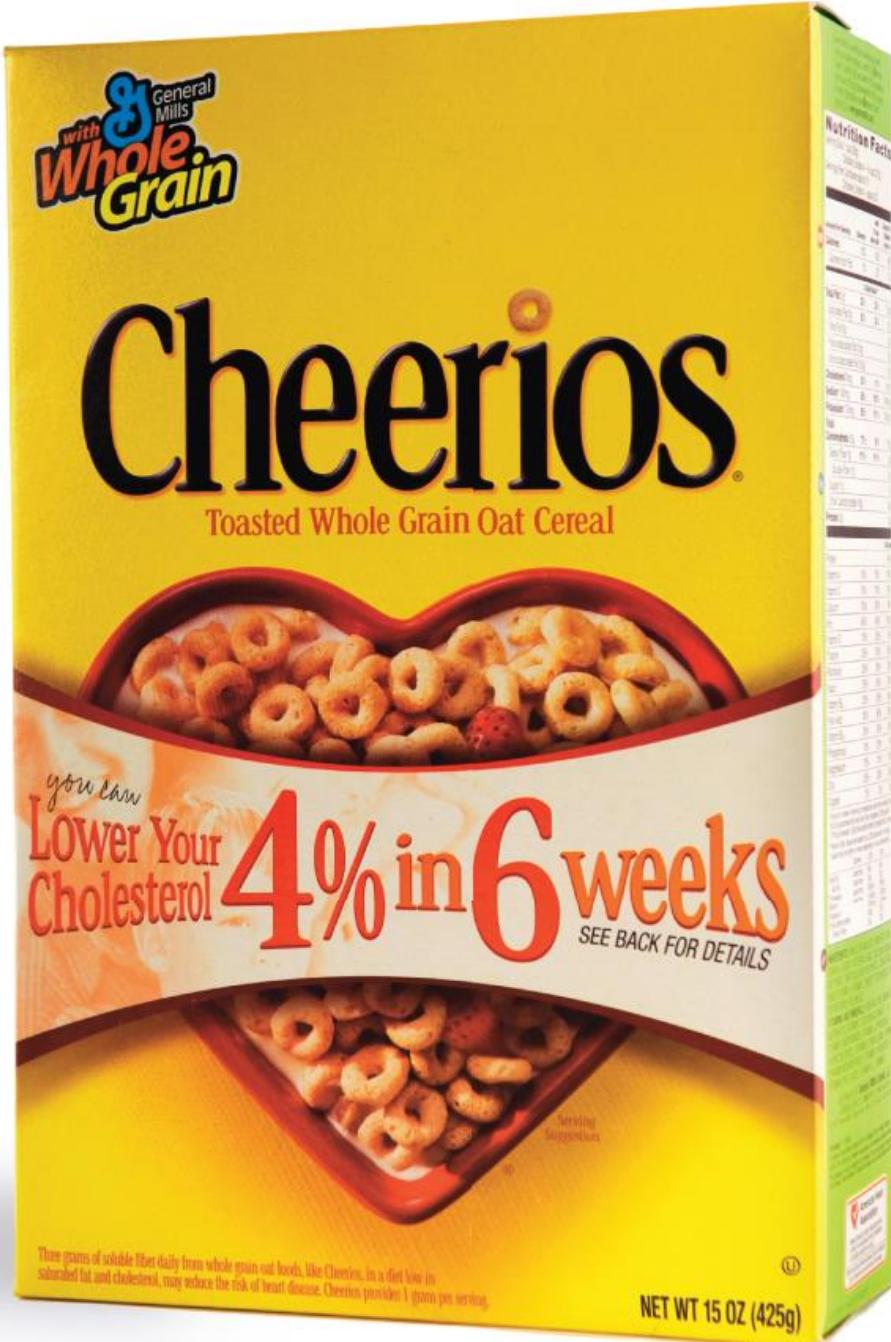
Daily Value Footnote
This footnote appears on many labels. It is omitted when there is too little space on the label to print it. The footnote reports the DVs used to compute the % Daily Value for a 2000- and 2500-calorie diet.

**REAL FOOD DOESN'T HAVE
INGREDIENTS, REAL FOOD
IS INGREDIENTS**

JAMIE OLIVER

PICTUREQUOTES .com

PICTUREQUOTES



Health Claims on Food Labels

- Health claims—closely regulated by FDA
- Preliminary health claims—regulated by FDA but evidence may be scant for the claim
- Nutrient claims—closely regulated by FDA
- Structure/function claims—these are not FDA-approved or necessarily valid

Other Terms

- **Fortified or enriched:** Vitamins and/or minerals have been added to the product in amounts in excess of at least 10% of that normally present in the usual product. *Enriched* generally refers to replacing nutrients lost in processing, whereas *fortified* refers to adding nutrients not originally present in the specific food.
- **Healthy:** An individual food that is low fat and low saturated fat and has no more than 360 to 480 mg of sodium or 60 mg of cholesterol per serving can be labeled “healthy” if it provides at least 10% of the Daily Value for vitamin A, vitamin C, protein, calcium, iron, or fiber.
- **Light or lite:** The descriptor *light* or *lite* can mean two things: first, that a nutritionally altered product contains one-third fewer kcal or half the fat of reference food (if the food derives 50% or more of its kcal from fat, the reduction must be 50% of the fat) and, second, that the sodium content of a low-calorie, low-fat food has been reduced by 50%. In addition, “light in sodium” may be used for foods in which the sodium content has been reduced by at least 50%. The term *light* may still be used to describe such properties as texture and color, as long as the label explains the intent; for example, “light brown sugar” and “light and fluffy.”

Other Terms

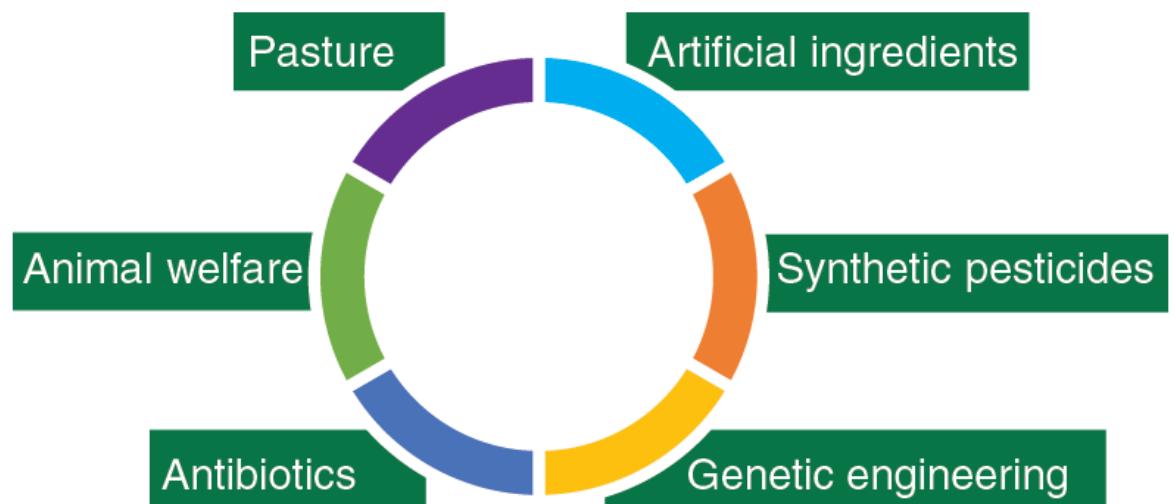
- **Diet:** A food may be labeled with terms such as *diet*, *dietetic*, *artificially sweetened*, or *sweetened with nonnutritive sweetener* only if the claim is not false or misleading. The food can also be labeled *low calorie* or *reduced calorie*.
- **Good source:** *Good source* means that a serving of the food contains 10% to 19% of the Daily Value for a particular nutrient. If 5% or less, it is a *low source*.
- **High:** *High* means that a serving of the food contains 20% or more of the Daily Value for a particular nutrient.

Other Terms



- **Organic:** Federal standards for organic foods allow claims when much of the ingredients do not use chemical fertilizers or pesticides, genetic engineering, sewage sludge, antibiotics, or irradiation in their production. At least 95% of ingredients (by weight) must meet these guidelines to be labeled “organic” on the front of the package. If the front label instead says “made with organic ingredients,” only 70% of the ingredients must be organic. For animal products, the animals must graze outdoors, be fed organic feed, and cannot be exposed to large amounts of antibiotics or growth hormones.
- **Natural:** The food must be free of food colors, synthetic flavors, or any other synthetic substance.

USDA's Organic Seal reflects regulatory standards for many of the “single-trait” practice claims on food products



Source: USDA, Economic Research Service.

Organic Standards

- Soil fertility
 - Soil conserving practices (ex. Cover crops to prevent erosion)
 - Build soil quality with compost and manure
 - Avoidance of sewage sludge
- Seeds and planting
 - Use of organic seeds
 - Use of non GMO conventional seeds if organic not available
- Practice crop rotation
- Management of pests, weeds and diseases
 - PAMS – prevention, avoidance, monitoring and suppression



Organic Standards

- Provide living areas for livestock that encourage health and natural behavior of animals
 - Reflect concerns for animal welfare
 - Access to outdoor, shade, shelter, space for exercise, fresh air, clean drinking water and direct sunlight
 - Protection from extreme temperatures
 - Adequate air circulation
 - Ruminants have access to graze
 - Organic feed
- Livestock must be raised organically from the last third of gestation.
- Birds can come from any source but must be raised organically starting the 2nd day of life



Logistics

- Apply after 3 years of following the guidelines
- Submit Organic System Plan
- On-site Inspection
- Once certified annual inspection



Organic inspector Elizabeth Whitlow at an organic vineyard inspection. Every organic operation involved between the farm and market is inspected to verify compliance with the USDA organic regulations. Photo courtesy ccof.org.



United States
Department of
Agriculture

ORGANIC LABELS EXPLAINED

Organic products are labeled according to the percentage of organic ingredients they have. This chart shows what to expect from different labels.

100% Organic



Organic



Made with Organic



Organic Ingredients



✓ Organic seal allowed

✓ 100% certified organic ingredients and processing aids

✓ No GMOs

✓ All ingredients comply with National List of Allowed and Prohibited Substances

✓ Certification required

✓ Organic seal allowed

✓ 95 % certified organic ingredients

✓ No GMOs

✓ Non-organic ingredients comply with National List

✓ Certification required

✗ Organic seal NOT allowed;
Must specify which ingredients are organic

✓ At least 70% certified organic ingredients

✓ No GMOs

✓ Non-organic ingredients comply with National List

✓ Certification required

✗ Organic seal NOT allowed;
Product can't be described as "organic"

✗ No specific % certified organic

✗ May contain GMOs

✗ Compliance with National List not required

✗ Certification NOT required

Learn more about organic labels at www.ams.usda.gov/organic

Agricultural Marketing Service, April 2018
USDA is an equal opportunity provider, employer, and lender.