

# ***Nutrition for Your Health***

## ***Chemistry and Society Forum***

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# Points of Emphasis

- Nutrition issues are at the crossroads of chemistry and society
- Obesity is an overarching concern
- Sodium illustrates many key chemistry <-> society principles
- Other nutrients of concern:
  - Saturated fat
  - vitamin A, vitamin D, vitamin E, vitamin C, folate, calcium, magnesium, fiber, and potassium – plus iron for women

# Says Who?

- Dietary Guidelines Advisory Committee 2015 (bios at <http://www.health.gov/dietaryguidelines/2015-scientific-report/20-appendix-E8.asp>)
- U.S. Centers for Disease Control and Prevention (CDC)
- USDA's MyPlate
- Michael Pollan on advocating for change

# Obesity Facts

- Obesity raises risk of heart disease, stroke, type 2 diabetes and certain types of cancer.
- In 2008, U.S. medical costs associated with obesity were \$147 billion
- Medical costs for obese people were \$1,429 higher than for those of normal/healthy weight.

# **Obesity affects some groups more than others**

- Non-Hispanic blacks have the highest age-adjusted rates of obesity (49.5%) compared with Mexican Americans (40.4%), all Hispanics (39.1%) and non-Hispanic whites (34.3%)**

**– Source: *JAMA*. 2012;307(5):491-497.**

# **BMI is used to measure overweight and obesity**

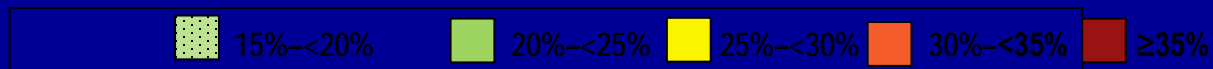
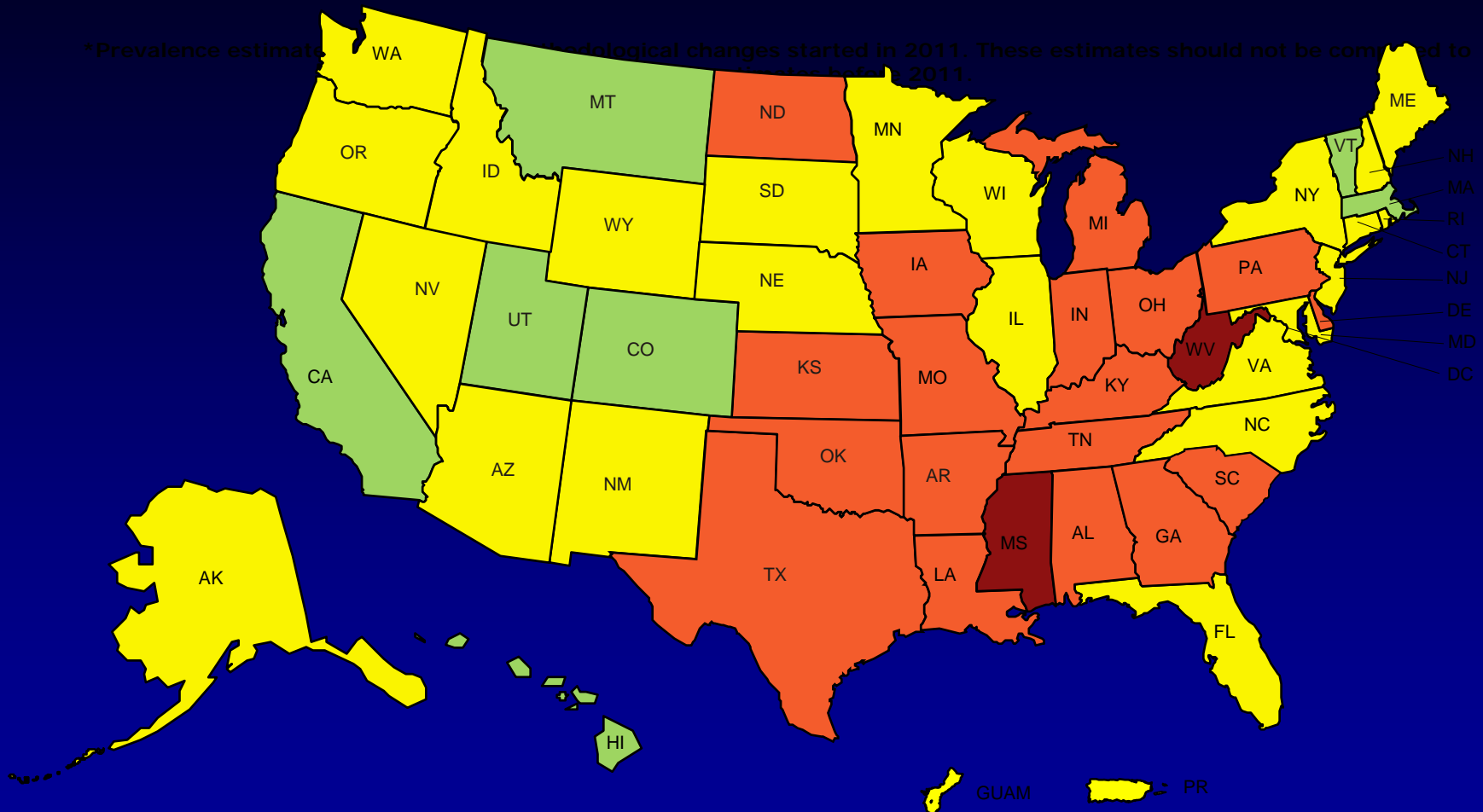
- **Weight (lb) / [height (in)]<sup>2</sup> x 703**
- **Example:  $[150 \div (65)^2] \times 703 = 24.96$**
- **For adults, <18.5 is underweight, 18.5 – 24.9 is healthy/normal weight, 25 - 29.9 is overweight, and >30 is obese**

# **Obesity causes/contributes to health problems**

- All-causes of death
- High blood pressure
- High LDL cholesterol, low HDL cholesterol, or high triglycerides
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea and breathing problems
- Chronic inflammation and oxidative stress
- Some cancers (endometrial, breast, colon, kidney, gallbladder, and liver)

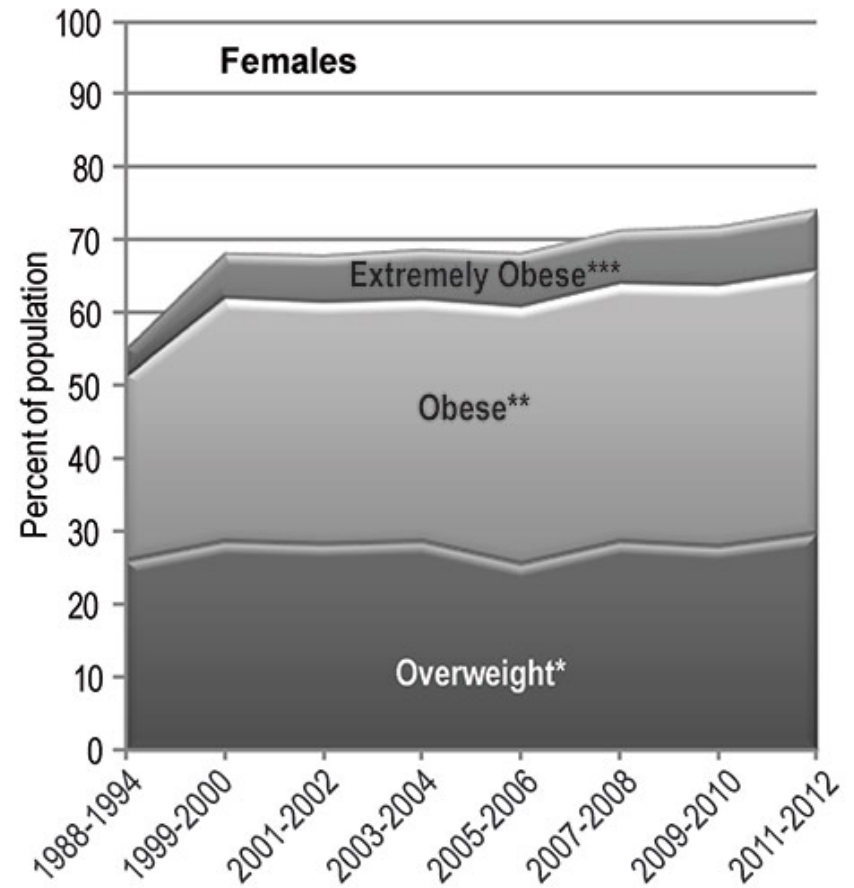
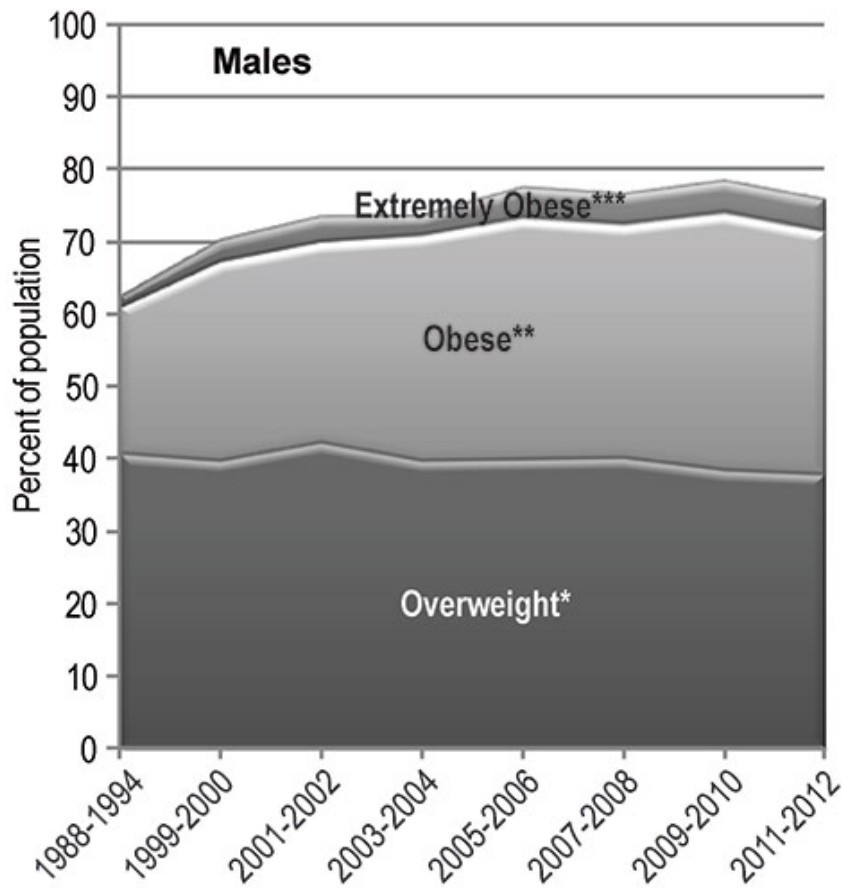
## Prevalence of Self-Reported Obesity Among U.S. Adults 2013

\*Prevalence estimate for WA. Epidemiological changes started in 2011. These estimates should not be compared to estimates before 2011.





# Overwt. & Obesity over Time

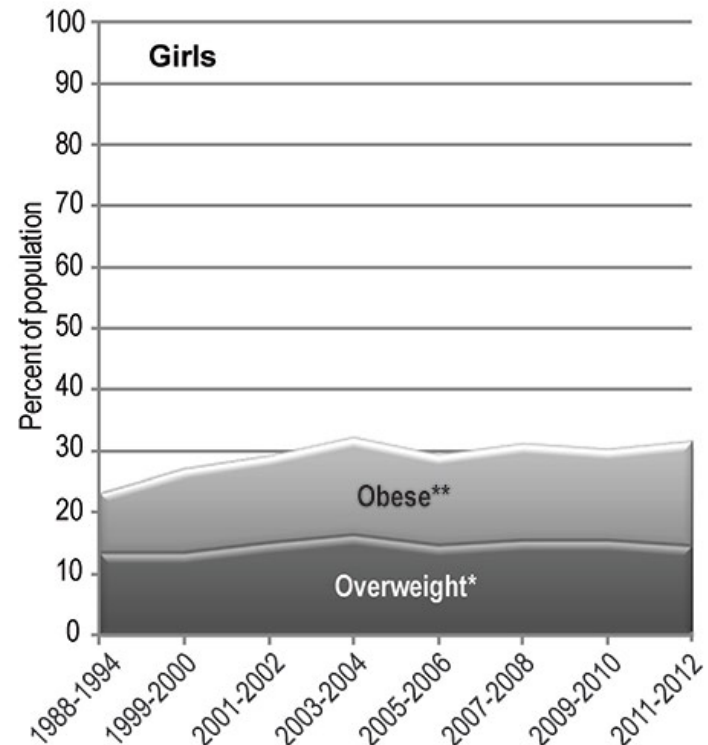
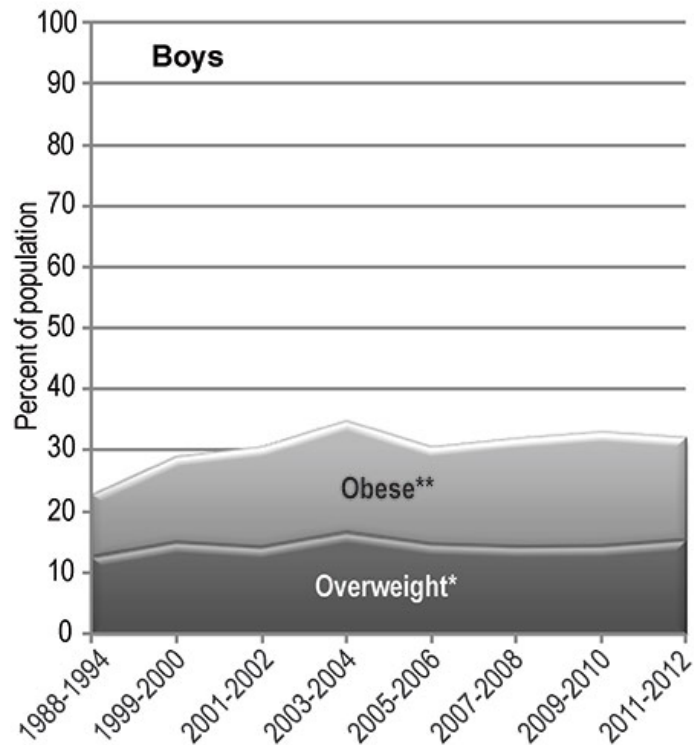


\*BMI = 25 to <30

\*\*BMI = 30 to <40

\*\*\*BMI = 40 and over

# Overwt. & Obesity in Children

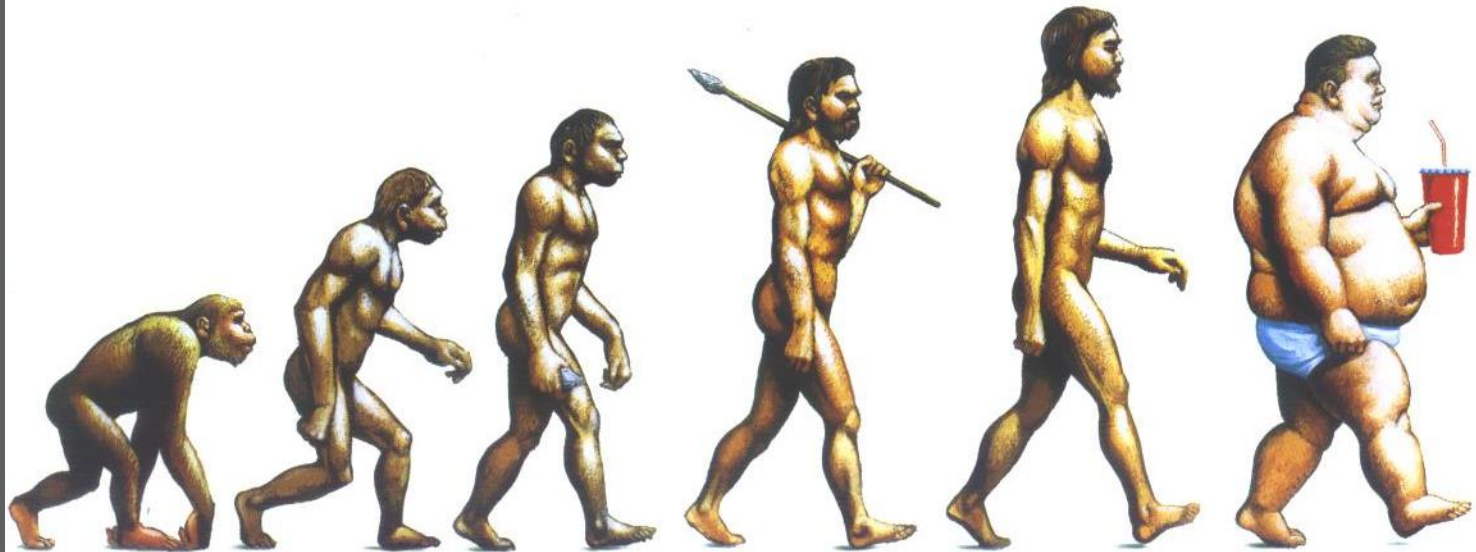


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# The shape of things to come



*The cover of "The Economist", Dec. 13-19, 2003.*

**Nutrition is a personal and  
societal concern for  
Americans of every shape  
and size**

# **Put on your thinking cap (no peeking)**

- **Which nutrients would you say we need more of in American dietary patterns?**
- **What are overconsumed nutrients?**

# Shortfall Nutrients

- vitamin A,
- *vitamin D\**
- vitamin E
- vitamin C
- folate
- *calcium\**
- magnesium
- *fiber\**
- *potassium\**
- iron\* for adolescent & premenopausal females

\*Nutrients of public health concern

# Overconsumed Nutrients

- Sodium
- Saturated fat
- Added sugars
- Goals for the general population:
  - less than 2,300 mg dietary sodium per day
  - less than 10 percent of total calories from saturated fat per day
  - a maximum of 10 percent of total calories from added sugars per day

# DGAC's Recommended Dietary Pattern

## *Higher in:*

- *vegetables*
- *fruits*
- *whole grains*
- *low- or non-fat dairy*
- *seafood*
- *legumes (beans)*
- *nuts*

## *Lower in:*

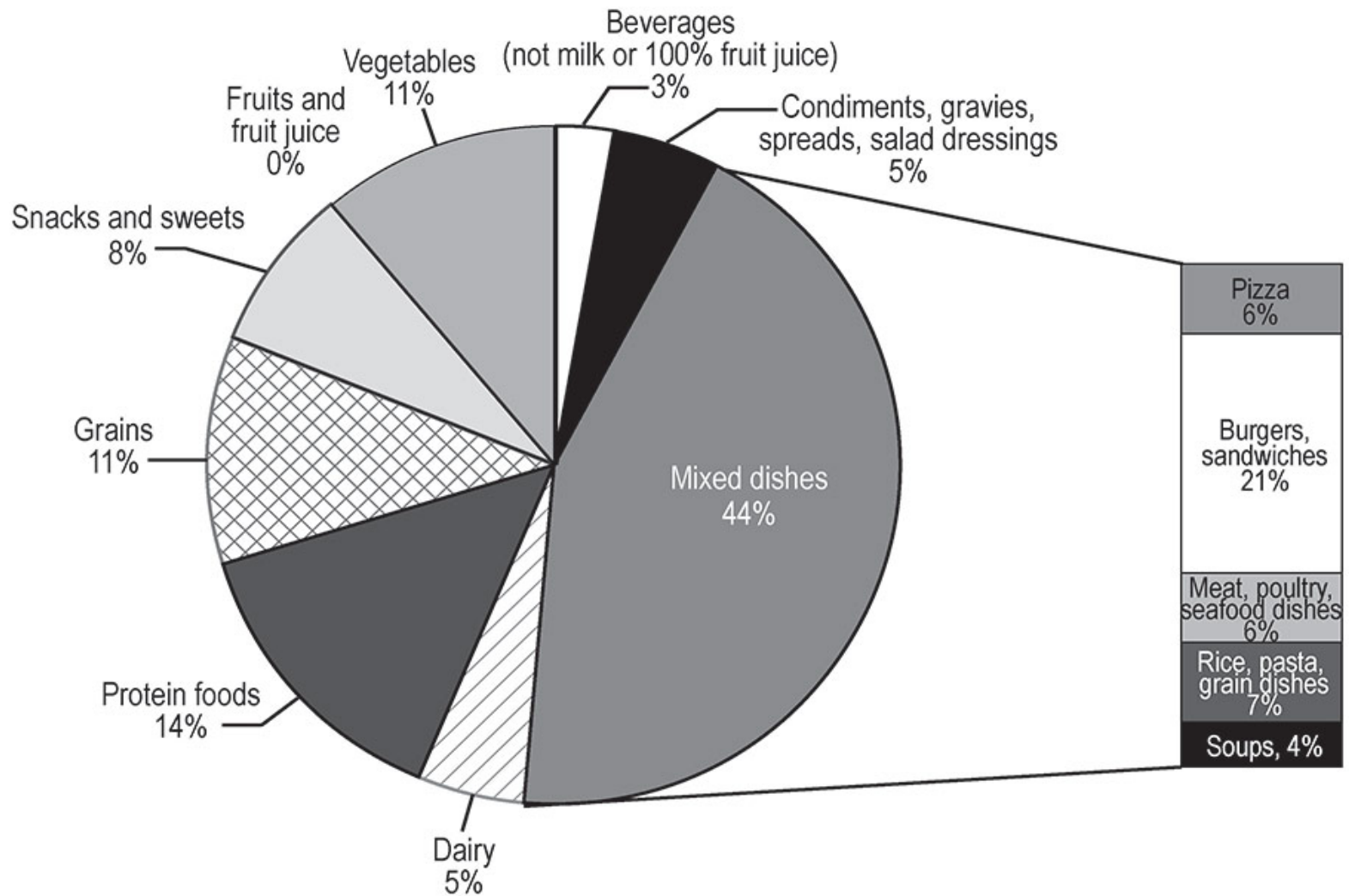
- *red meats and processed meats*
- *sugar-sweetened foods and drinks*
- *refined grains.*
- *Moderate in alcohol (adults)*



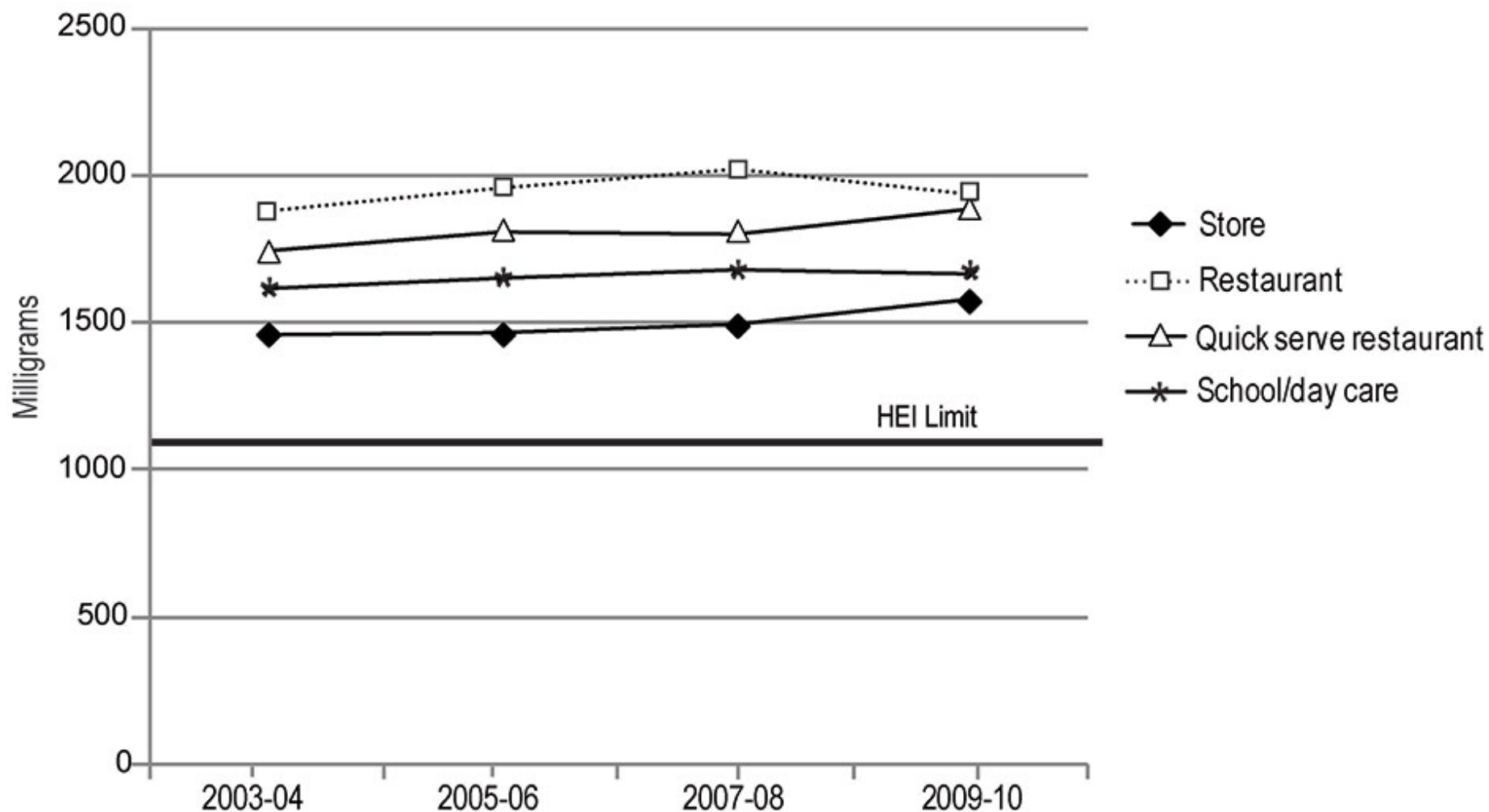
# Sodium Chloride = NaCl = Salt

- Both terms may be seen on labels.
- 90% of the sodium we consume is in the form of salt which is 40% sodium.
- High sodium intake raises blood pressure, a major cause of heart disease and stroke.
- Average daily sodium intake is >3,400 milligrams (mg) in the U.S., compared to goal of <2,300 mg (about a tsp.)

# Sources of Sodium



# Sodium Density by Source



# Tips for Eating Less Sodium

<http://www.choosemyplate.gov/food-groups/downloads/TenTips/DGTipsheet14SaltAndSodium.pdf>

- Think fresh
- Enjoy home-prepared foods
- Fill up on veggies and fruits
- Choose dairy & protein foods lower in sodium
- Adjust your taste buds
- Skip the salt
- Read the label
- Ask for low sodium foods when eating out
- Pay attention to condiments
- Boost your potassium intake

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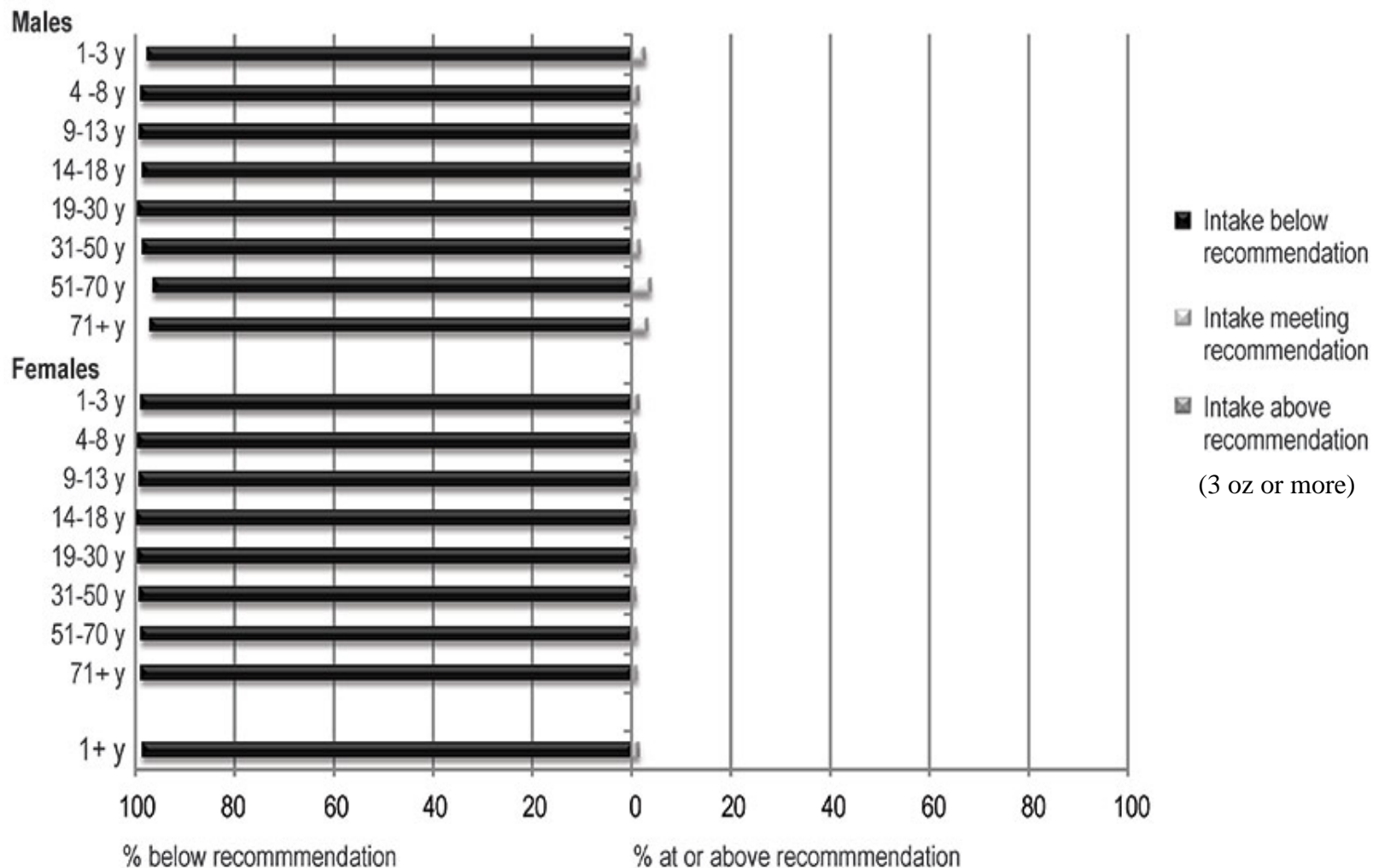
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- **Boost your potassium intake**

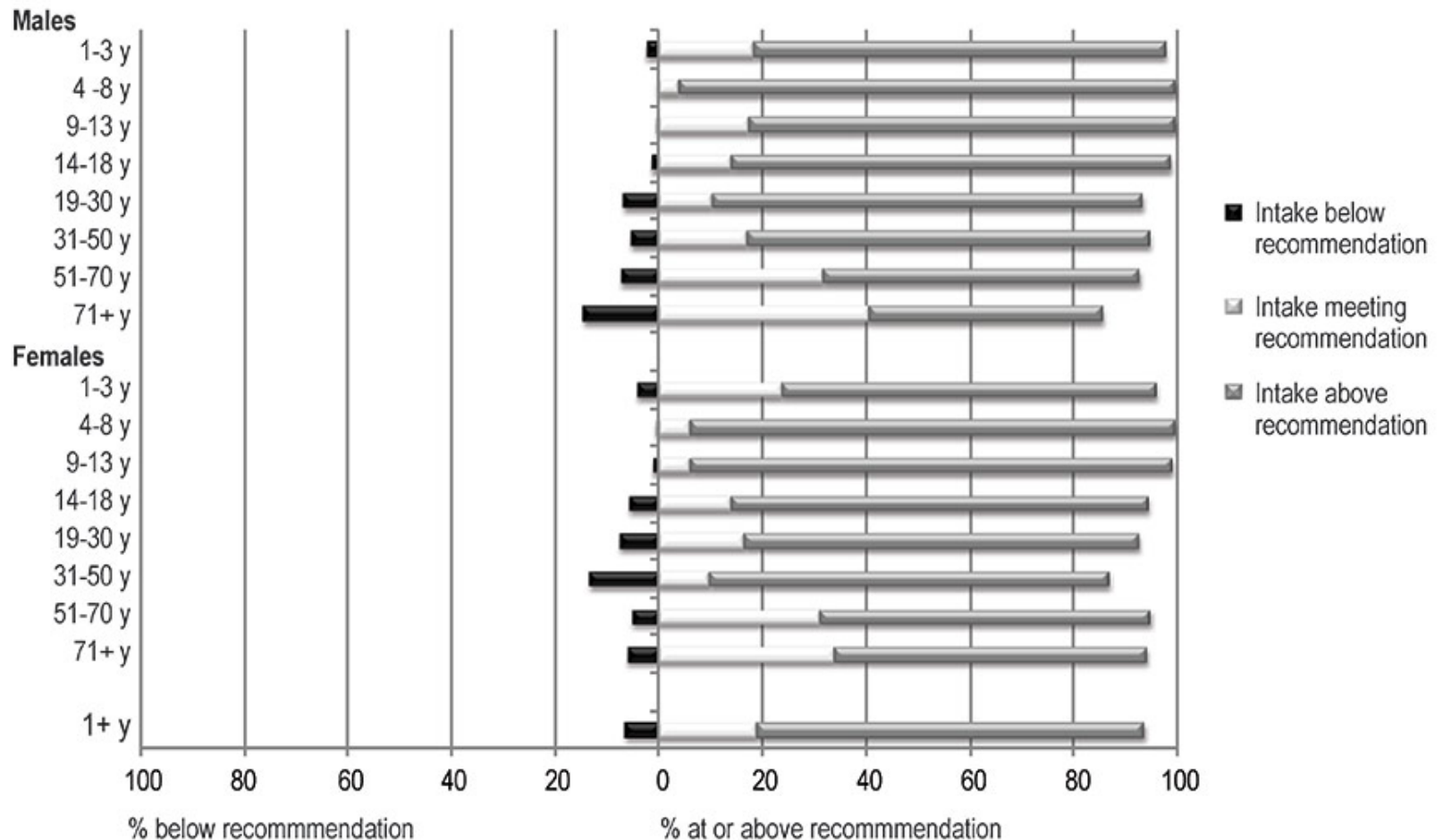
# Potassium

- Aim for 4,700 milligrams of potassium from food and beverages each day.
- Potassium helps to counterbalance some of sodium's harmful effects on blood pressure.
- Food Sources
  - leafy greens, such as spinach and collards
  - fruit from vines, such as grapes and blackberries
  - root vegetables, such as carrots and potatoes
  - citrus fruits, such as oranges and grapefruit

# Whole Grains

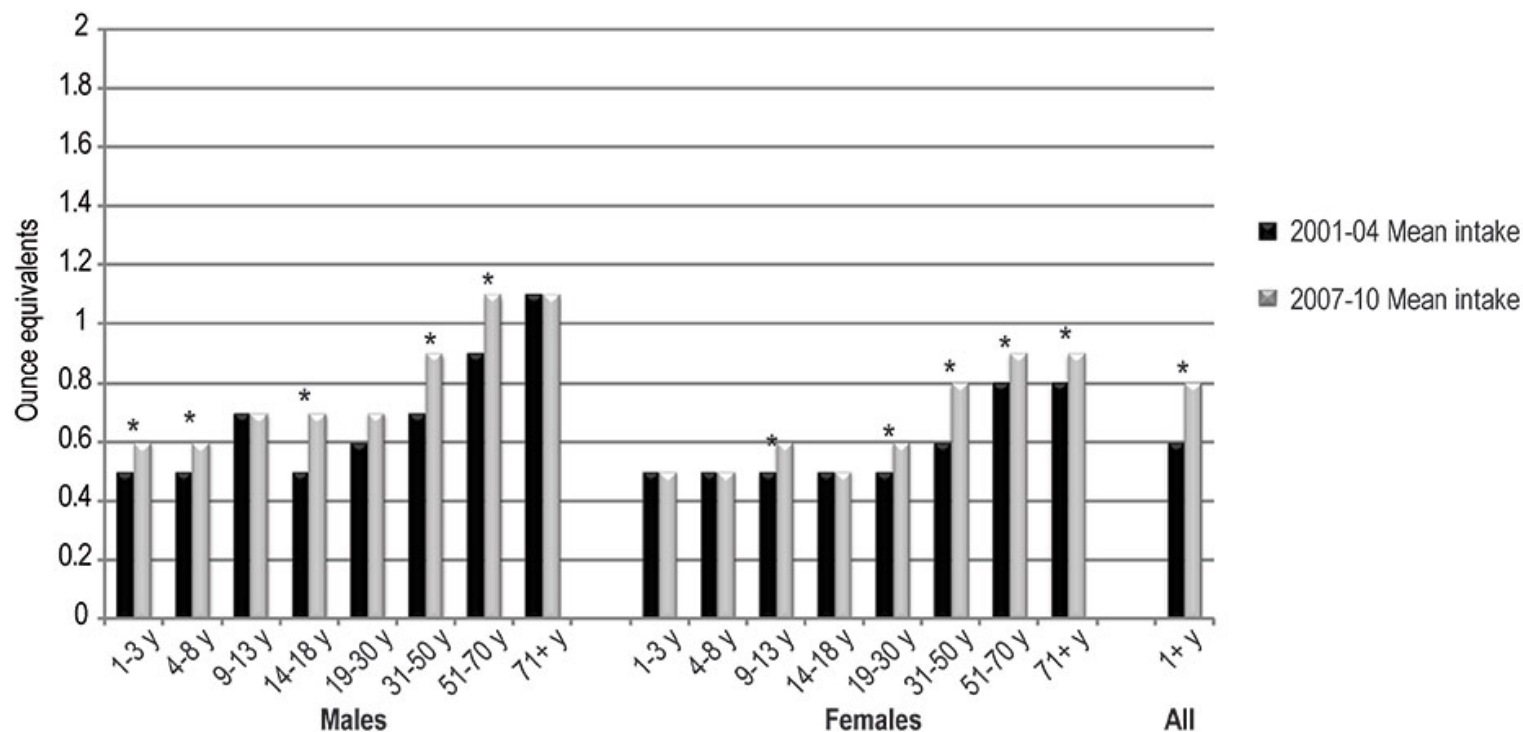


# Refined Grains

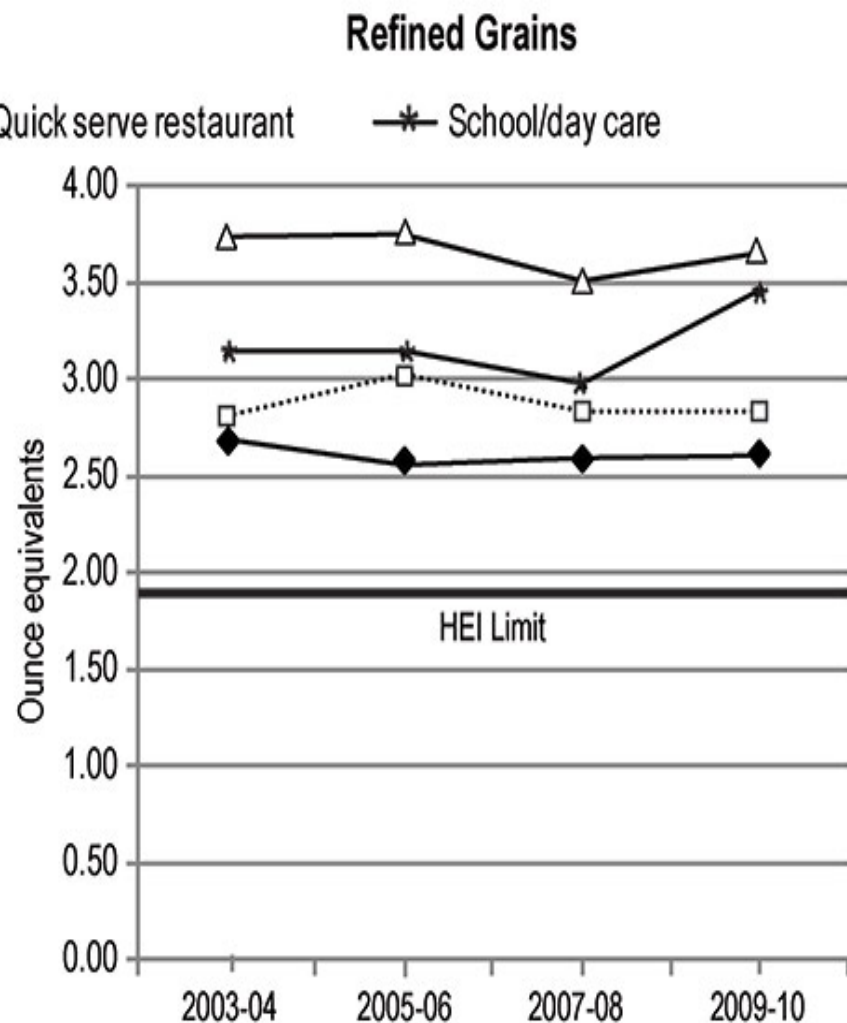
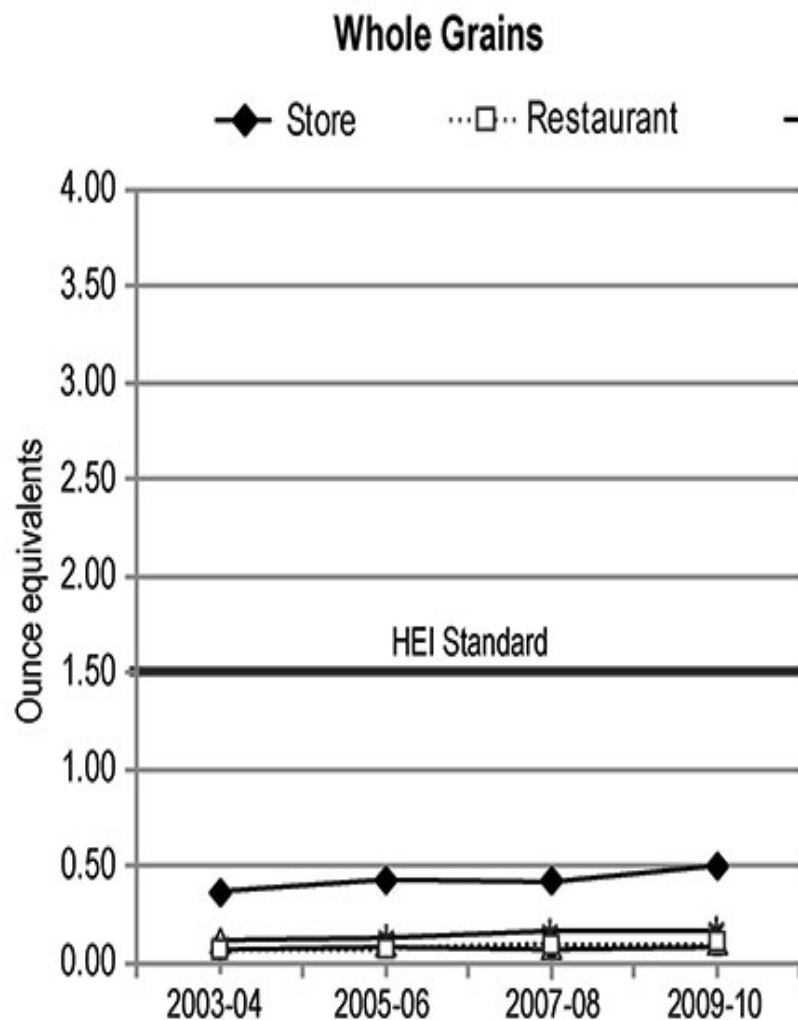




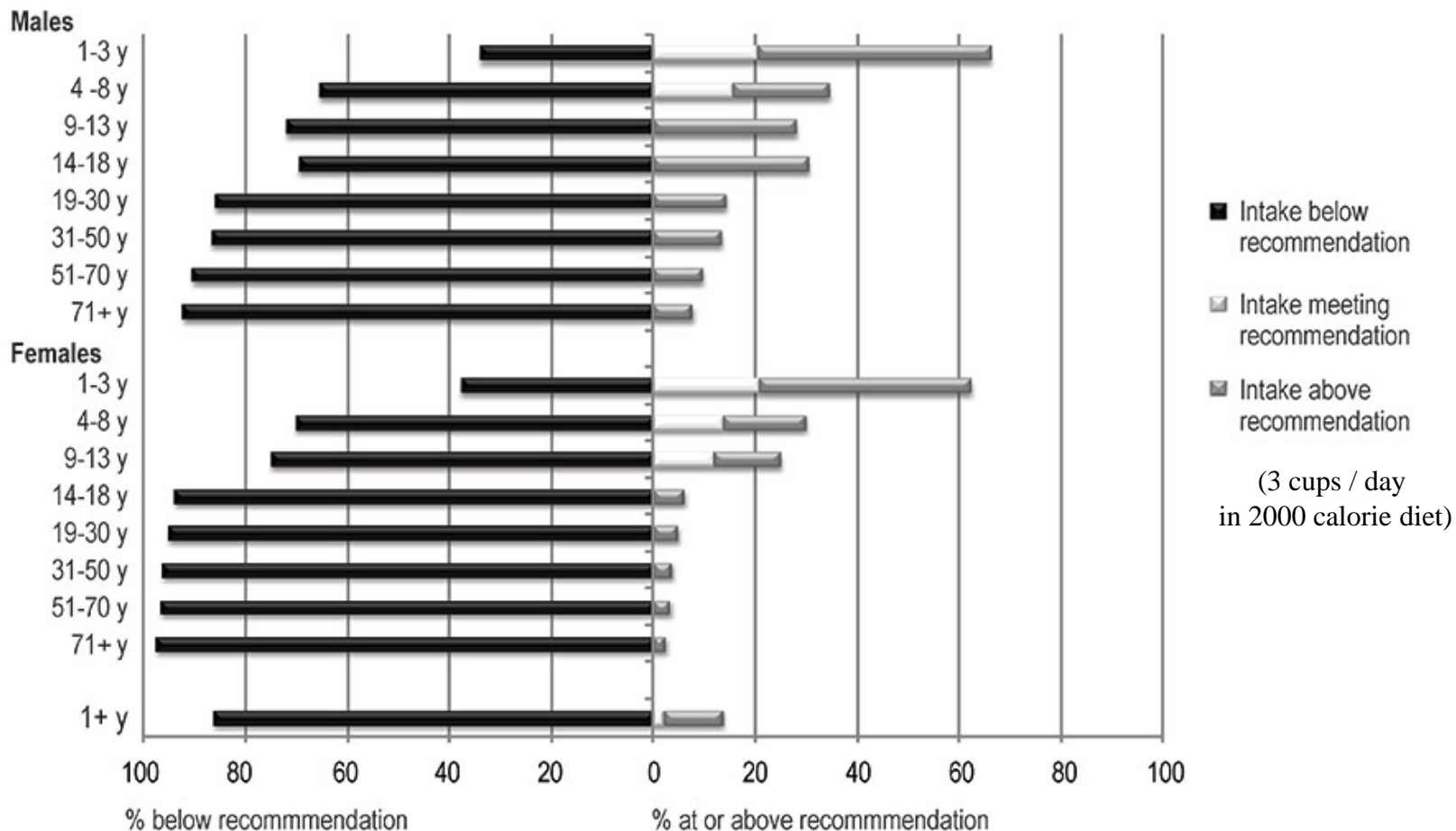
# Whole Grains 2001-04 vs 2007-10



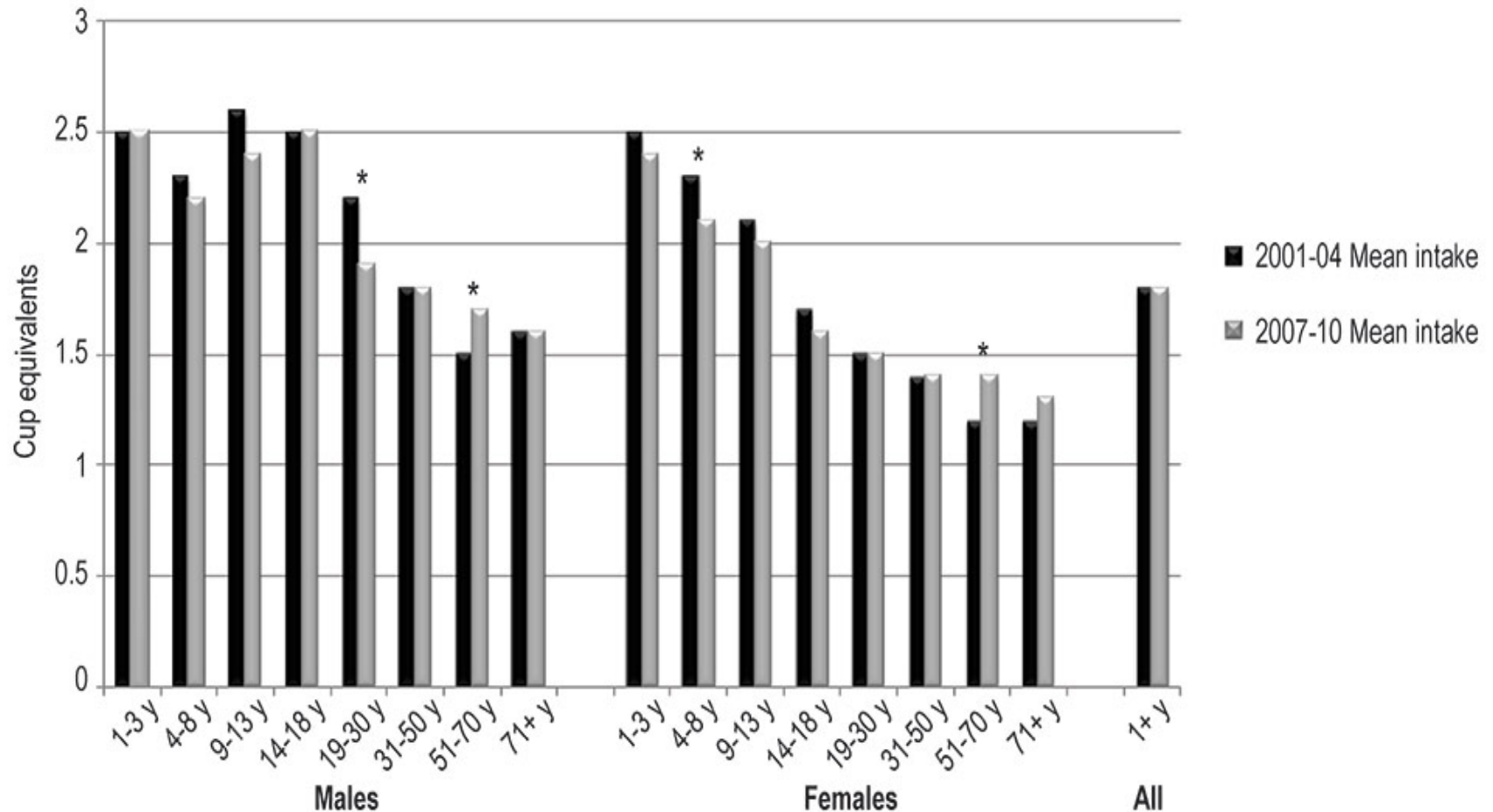
# Whence Cometh Thy Grains?



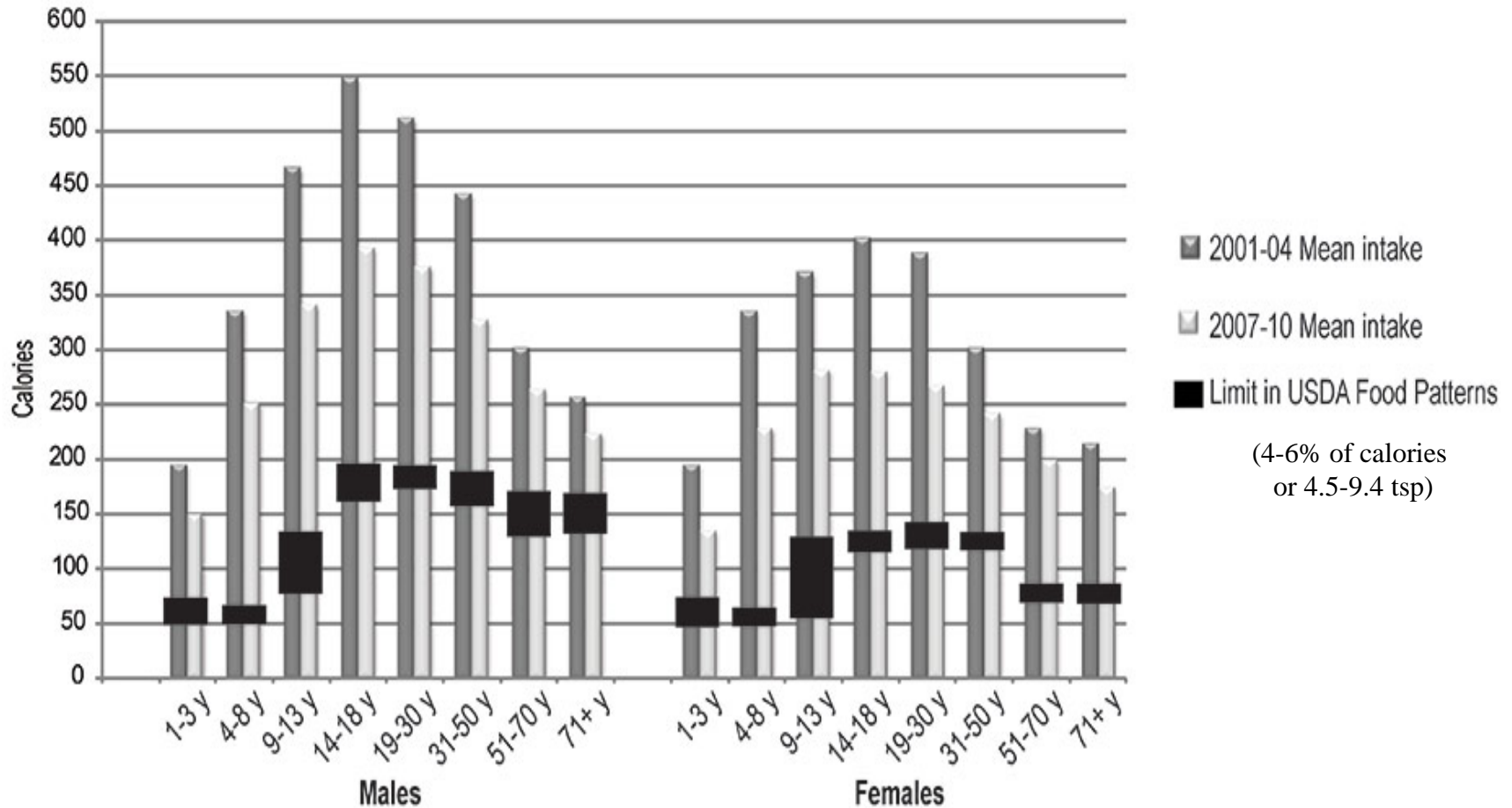
# Dairy



# Dairy: 2001-04 vs 2007-10



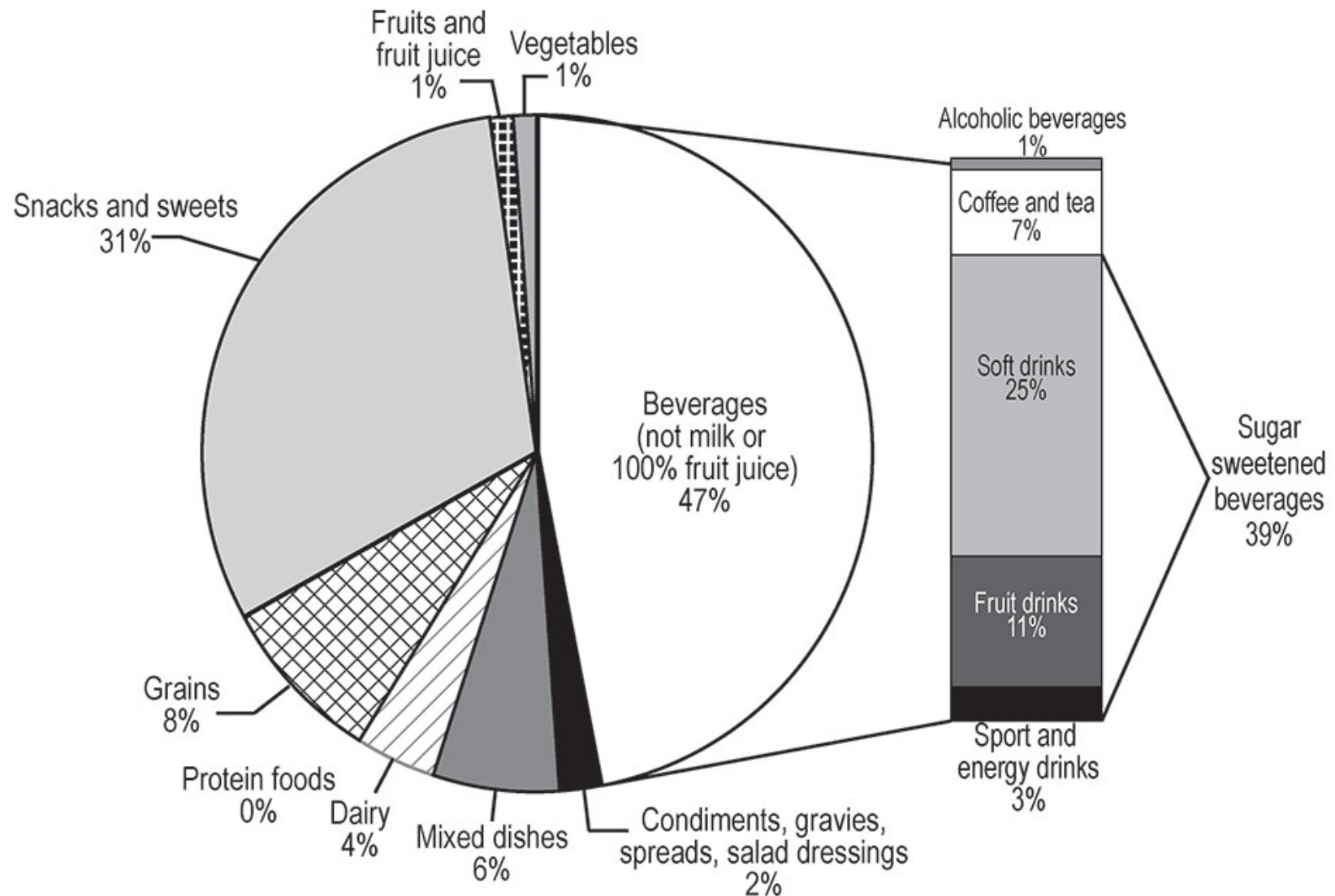
# Added Sugars



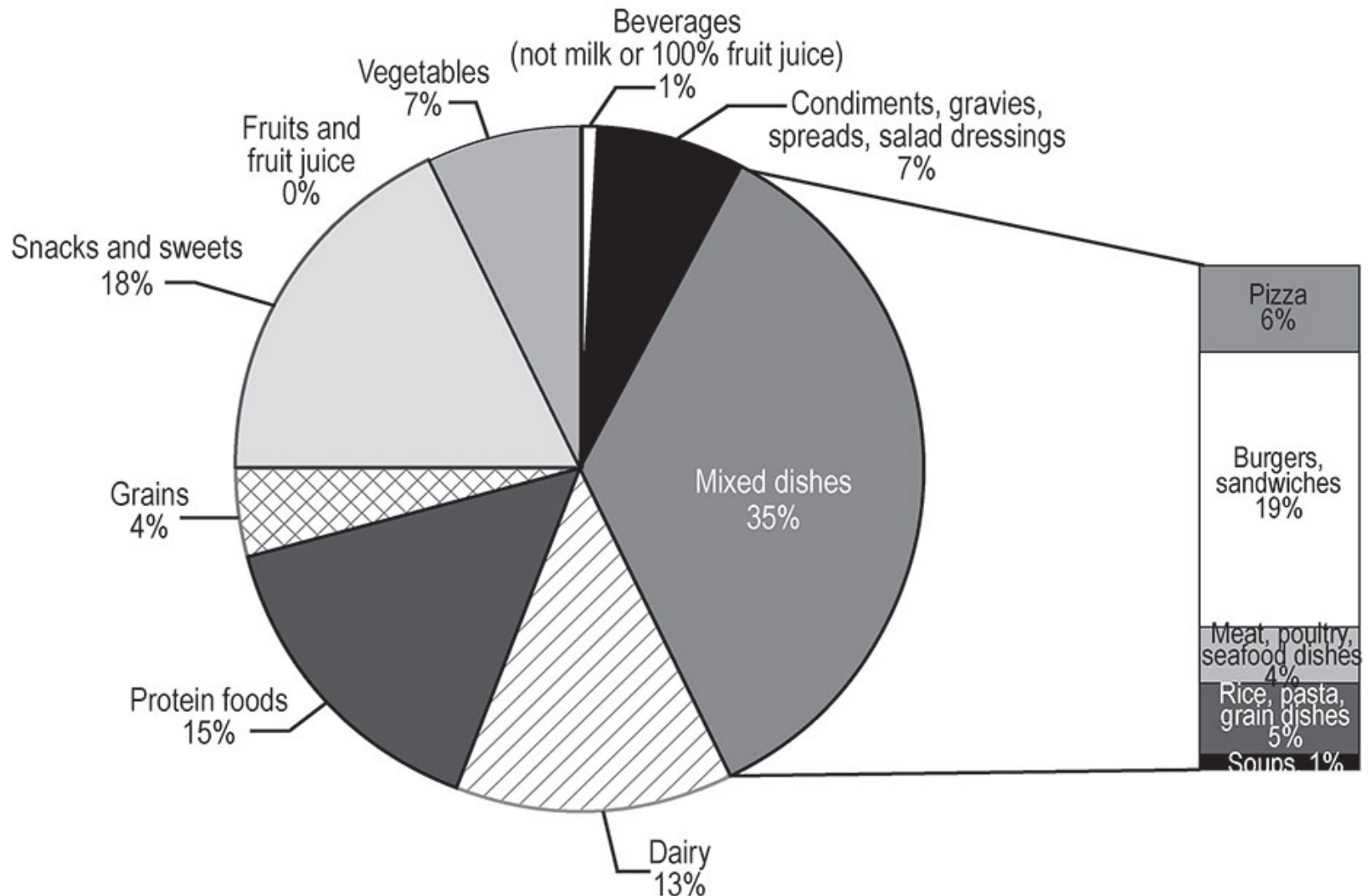
# Forms of Added Sugar

- granulated/white sugar or sucrose
- dextrose or anhydrous dextrose
- brown sugar
- confectioner's powdered sugar
- corn syrup or solids
- fructose
- high-fructose corn syrup (HFCS)
- honey
- invert sugar
- lactose
- malt syrup
- maltose
- maple syrup
- molasses
- nectars (e.g., pear)
- pancake syrup
- raw sugar/cane juice

# Sources of Added Sugars

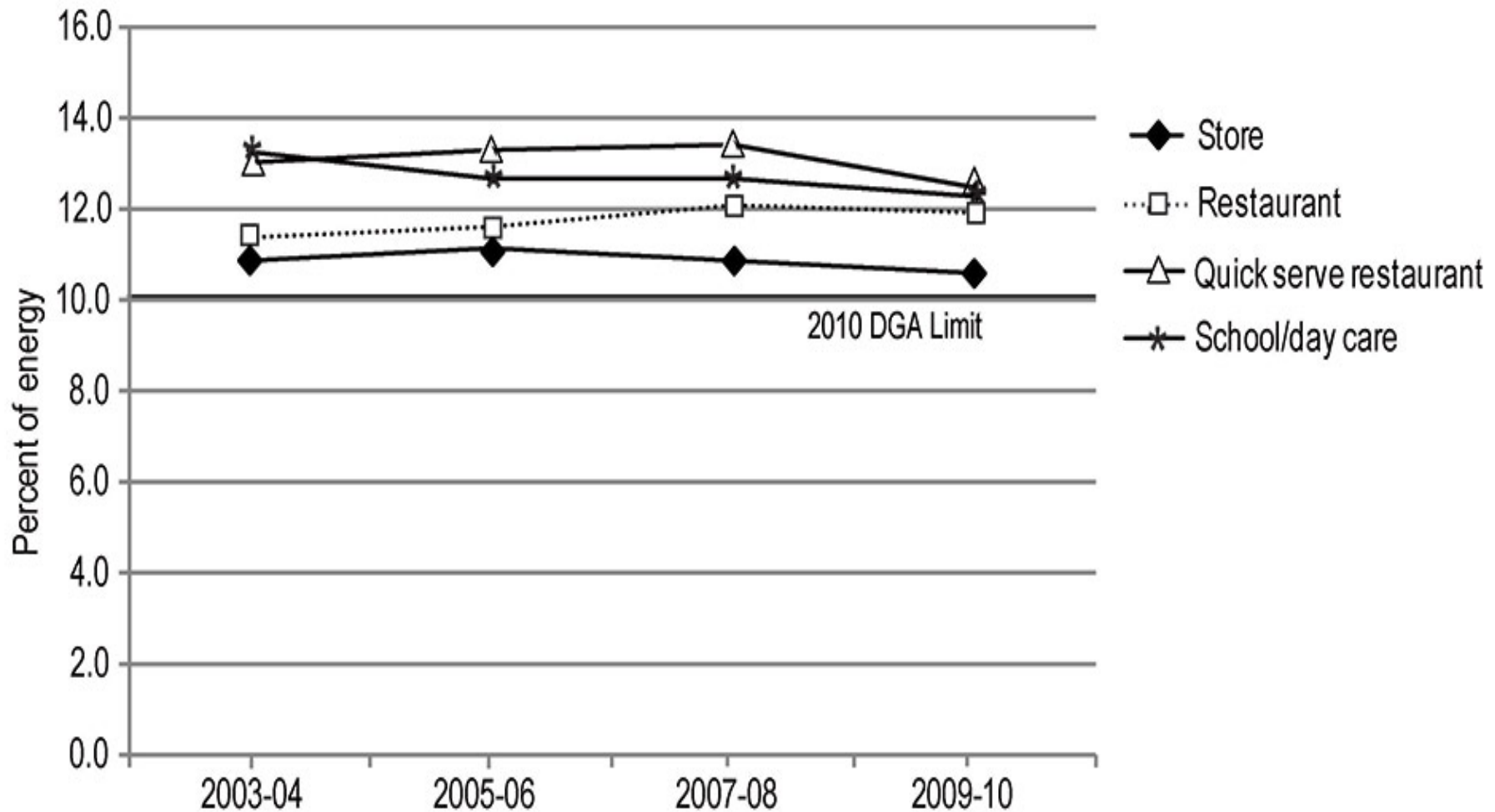


# Sources of Saturated Fats





# Sat. Fat Density by Source



# Sustainability

- The major findings regarding sustainable diets were that a diet higher in plant-based foods, such as vegetables, fruits, whole grains, legumes, nuts, and seeds, and lower in calories and animal-based foods is more health promoting and is associated with less environmental impact than is the current U.S. diet.

# Seafood Issues

- **Overfishing in the past decades has raised concern about the ability to produce a safe and affordable supply.**
- **Concerns have been raised about the safety and nutrient content of farm-raised versus wild-caught seafood**
- **To supply enough seafood to support meeting dietary recommendations, both farm-raised and wild caught seafood will be needed.**

# **Your To-Do List from DGAC:**

- **Know and understand how to modify your diet and physical activity.**
- **Know your current dietary pattern, including your healthy choices that can be maintained as well as areas for potential change.**
- **Act on this information.**
- **Seek to make gradual and sustainable changes in your dietary behaviors.**

# Challenge:

- DGAs and USDA's MyPlate summarize science-based information on *what* and *how* to eat for health.
- **You** must decide how to put the recommendations into action in a way that fits your personal life situation and values/beliefs.

# Questions?

