

USDA's Food Guide Pyramid Database

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Food Guide Pyramid

...a guide to healthful eating



The Goal

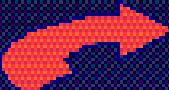
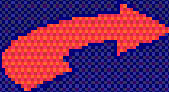
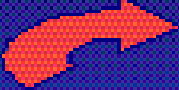
Develop a database for converting food intake data into servings as defined by the Pyramid so intakes could be compared to food-based recommendations

The Problem

Food intake data could not be compared to Pyramid recommendations because...

- Data were in grams, but...
recommendations were in servings
- Many Pyramid foods are consumed as ingredients in mixtures

Method for Developing Pyramid Servings Database

-  Separate foods into ingredients that fit into Pyramid food groups
-  Determine serving weights for foods or ingredients
-  Calculate number of servings from Pyramid food groups in 100 grams of each food reported in survey

Example of Multi-level Recipe File...

...used to separate foods into ingredients*

Food Reported	Ingredients		
Beef Barbecue on Bun (code 27510110)	LEVEL 1 → ground beef, cooked** → hamburger roll → barbecue sauce	LEVEL 2 → flour → milk solids → sugar → shortening → catsup → brown sugar → onions	LEVEL 3 → tomato sauce → sugar

* Recipes are generic estimates of what people consume.

** Red indicates level at which ingredient was assigned serving weight and categorized in Pyramid food group.

Example from Food Coding Database... ...the source of weights for servings

51000200 Roll, NS as to major flour

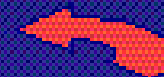
1 pan, dinner, or small roll	28 gm
1 medium (2-1/2" dia)	36 gm
1 hamburger, large....	43 gm



Pyramid counts a small roll as a grain serving (i.e., 28 grams)

75221011 Onions, mature, ckd from fresh...

1 cup	210 gm
1 medium slice (1/8")	12 gm
1 large slice (1/4")...	32 gm



Pyramid counts 1/2 cup as a vegetable serving (i.e., 105 grams)

Pyramid Servings Database

- Data on number of servings per 100 grams
- 30 food groups
- 6,000 foods used in CSFII 1994-96

Example: Beef Barbecue on Bun (code 27510110)

Total grain	Total veg	Tomato	Meat (oz)	Discretionary fat (g)	Added sugars (tsp)
1.32	.09	.05	.85	4.14	1.39

*Servings per 100 grams
(A beef barbecue on bun weighs 186 grams)*

How many Pyramid servings are in a beef barbecue on bun?

Since it weighs 186 grams, multiply servings per 100 grams by 1.86 to find that it has...

- 2-1/2 grain servings... from bun
- 1/6 vegetable serving... from onions & tomato sauce
- 1-5/8 ounces cooked lean meat... from ground beef
- 8 grams of discretionary fat... from ground beef
- 2-/12 tsp of added sugars... from roll & barbecue sauce

How Were Grain Servings Defined?

- Use basic Pyramid definition
 - yeast breads... 1 slice bread, 1 small roll, 1/2 bagel
 - muffins... 1 small muffin
 - rice, pasta... 1/2 cup cooked
 - cereals (grain ingredient; not fruits & nuts)... 1 oz
- Calculate number of servings based on grain content (16 g of flour = 1 serving -- amount in 1 slice of bread)
 - snack-type grains (ex: cracker, pretzel, corn chip)
 - dessert-type grains (ex: cookie, cake, pie crust)
 - batter, breading, thickener

How were servings of whole grains and nonwhole grains determined?

- Classify grain ingredients as whole- or nonwhole-grain
- Determine total grain servings per 100 grams
- Divide total servings based on proportion of grain ingredients that were whole- and nonwhole-grain

Ex: CRACKED WHEAT BREAD 4.0 servings per 100 grams

67% white wheat flour 2.7 servings nonwhole grain

33% whole wheat flour
 wheat bran 1.3 servings whole grain

How Were Vegetable Servings Defined?

- Use basic Pyramid definition...
1 cup raw leafy; 1/2 cup cooked; 3/4 cup juice
- Potato chips... 1 ounce
(same carbohydrate as 1/2 cup baked potato)

How Were Fruit Servings Defined?

- Use basic Pyramid definition
 - 1/2 cup chopped, cooked, canned fruit
 - 1/4 cup dried fruit
 - 3/4 cup fruit juice
(single strength or <10% sugar by weight)
- Juices >10% sugar by weight, drinks, ades...
 - separated into ingredients
 - servings based on fruit ingredients only

How Were Dairy Servings Defined?

- Milk, yogurt: Use Pyramid definition... 1 cup
- Cheese: Use concept underlying Pyramid definition
 - ounces to provide ~300 mg calcium
 - most were 1, 1-1/2, or 2 ounces per serving
- Ice cream, frozen yogurt, custard, pudding
 - handle as mixtures & separate into ingredients
 - servings based on quantity of milk ingredient
- Dairy ingredients counted toward dairy servings except milk in grain products and processed meats

How Were Meat Servings Defined?

- Use Pyramid definition... ounces of cooked lean meat equivalents
 - meat, poultry, fish
 - eggs
 - nuts, seeds
 - soy analogs, tofu
- Definition: Cooked lean meat contains no more than 9.35 grams of fat and at least 90.65 grams of lean in 100 grams
- Fat in excess of this ratio was counted toward Pyramid tip

The Pyramid Tip...

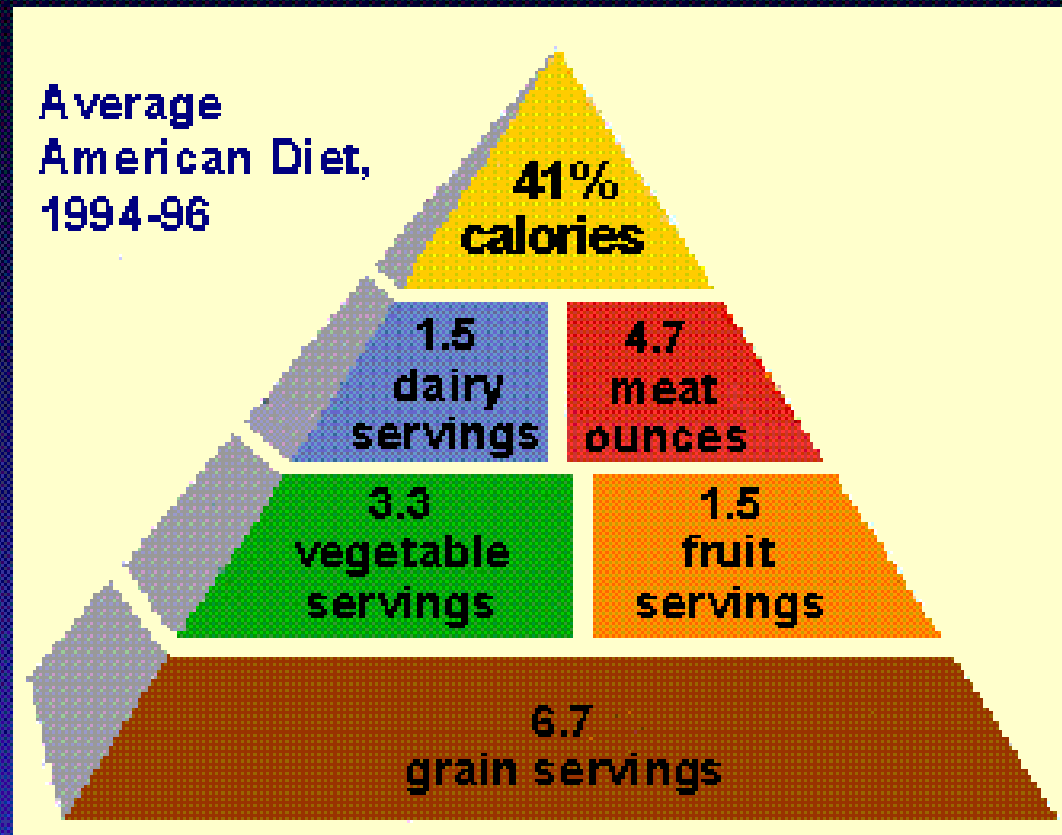
Discretionary fat includes--

- "excess" fat from major food groups beyond amount that would be consumed if only the lowest fat forms of foods within each group were eaten
- fat ingredients in prepared foods
- fats added to foods at the table

Added sugars include--

- sugars used as ingredients in processed and prepared foods, such as cakes, soft drinks, jam
- sugars eaten separately or added at table

American Diet Compared to Food Guide Pyramid Recommendations



Recommendation[†]

Tip... ~25% kcal^{††}

Dairy... 2-3

Meat... 5-7 oz

Vegetable... 3-5

Fruit... 2-4

Grain... 6-11

[†] In daily servings from dairy, vegetable, fruit, and grain groups and ounces from meat group.

^{††} Includes discretionary fat and added sugars.

Source: USDA, Continuing Survey of Food Intakes by Individuals, 1994-96, 2-day average, individuals 2 years and over

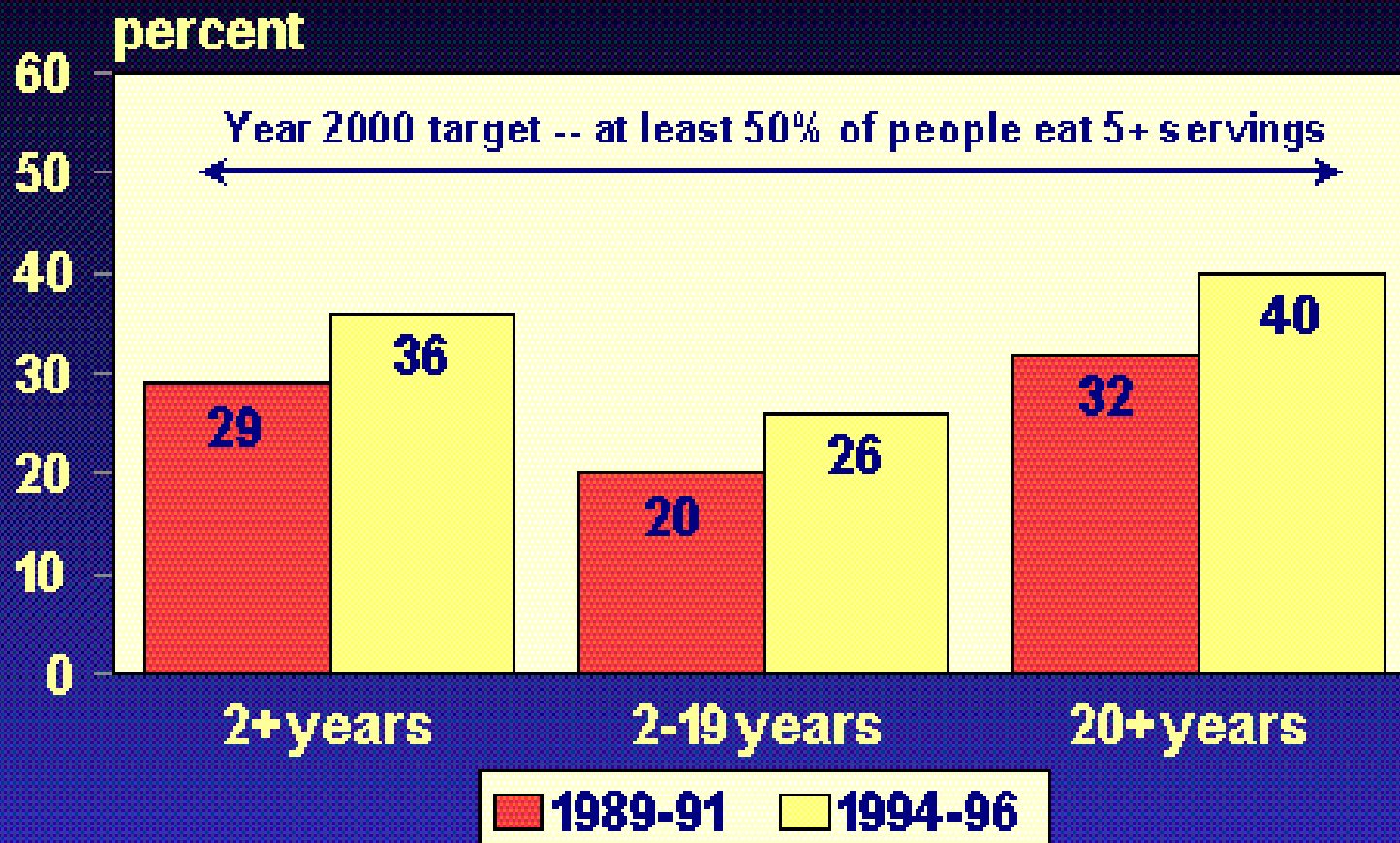
Percentage Meeting Pyramid Recommendations, 1994-96

Food Group	Percent of Population
Grain	38
Vegetable	41
Fruit	23
Dairy	23
Meat	32

Source: USDA, Continuing Survey of Food Intakes by Individuals, 1994-96, 2-day average, individuals 2 years and over

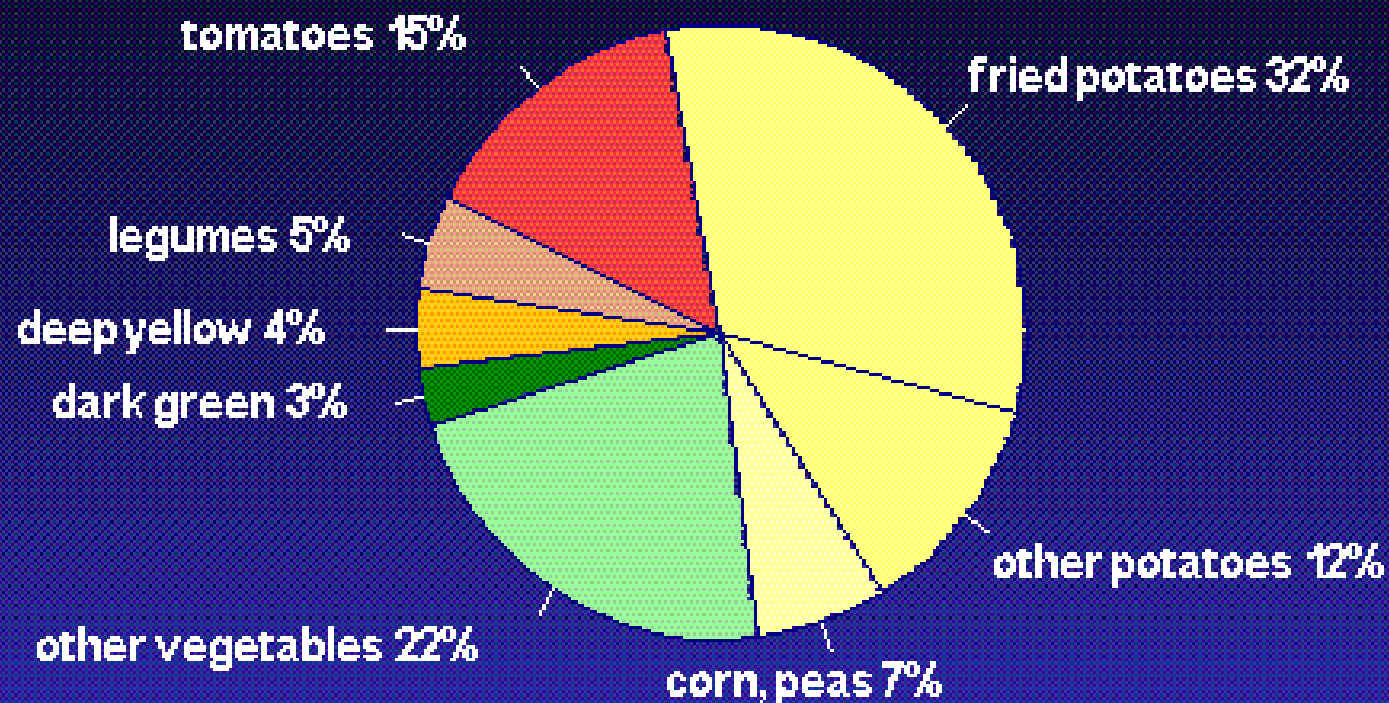
Trends in Fruit and Vegetable Intake

Percentage with 5 or more daily servings by age



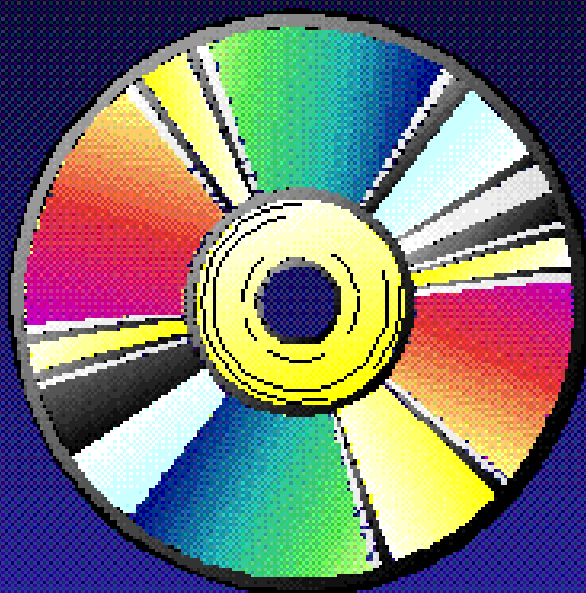
Source: USDA, Continuing Survey of Food Intakes by Individuals, 1994-96, 2-day average, individuals 2 years and over

Proportion of Vegetable Servings Children and Teens 2-19 years



Source: USDA, Continuing Survey of Food Intakes by Individuals, 1994-96, 2-day average

1994-96 Pyramid Servings Database and Intake Files Available on CD-ROM



- Pyramid servings
- Food & nutrient Intakes
- Eating occasion
- Source of food
- Health-related behaviors
- Dietary knowledge & attitudes

World Wide Web Site:

<http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm>