Findings

Estimated food supply servings for 1996 suggest that the average American diet is out of balance with Food Guide Pyramid serving recommendations (fig. 4). Average consumption is heavily weighted toward the added fats and added sugars at the tip of the Pyramid while falling short of serving recommendations for fruits, vegetables, dairy products, and lean meats. At the same time, the mix of foods provided by the bread, cereals, rice, and pasta groups may need to change for most consumers to meet recommendations for dietary variety and selected food components such as fiber, total fat, saturated fat, and cholesterol.

Comparing food supply servings over 27 years with Food Guide Pyramid serving recommendations also suggests that while many consumers have made positive dietary changes, the pace of change has been slow (table 2). While the average number of servings for several food groups—grains, vegetables, and fruits—has moved closer to Food Guide Pyramid serving recommendations since 1970, the grains group is the only food group where total servings met recommendations for a 2,200-calorie diet in 1996. Limited movement in the average consumption of dairy products and fruits since 1970 contrasts with a sharper increase in servings of added fats and sugars over the same time period.

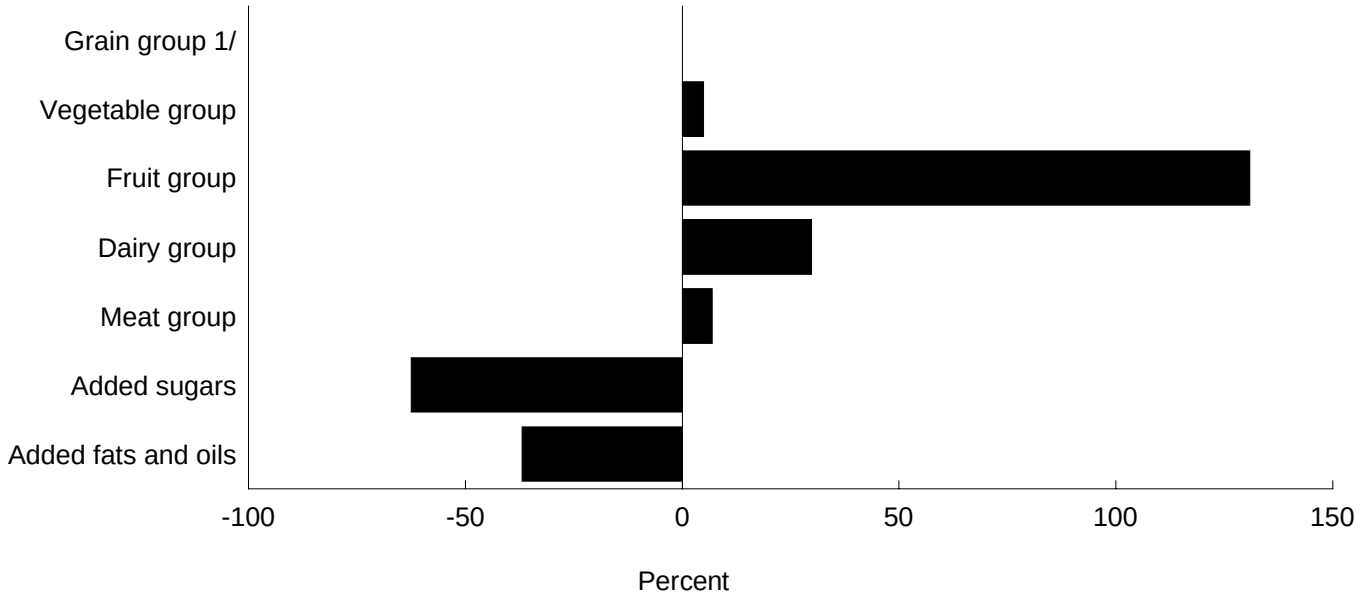
Bread, Cereals, Rice, and Pasta Group

The food supply provided an estimated 9.7 daily servings of grain products in 1996, at the mid-range of the 6-11 daily servings recommended for all Americans aged 2 and older (table 3). This result suggests that many consumers met the Food Guide Pyramid serving recommendation for this group appropriate to a 2,200-calorie diet. Total daily servings were more than a third higher—or the flour equivalent of about 2.5 servings of bread—than the 6.8 servings consumed in 1970. This result suggests that many consumers are heeding nutrition education messages to increase their consumption of grain products (fig. 5).

Almost half of the 20-year serving increase was accounted for by higher consumption of white and whole wheat flour. A twofold increase in durum flour (used for pasta) and corn products (mostly corn meal and corn flour probably used for snack chips and Mexican-style foods such as tortillas), and a threefold increase in rice consumption, accounted for the

Figure 4

Change in food supply servings needed to meet Food Guide Pyramid serving recommendations for a 2,200-calorie diet, 1996



1/ Grain group servings meet the recommendation for a 2,200-calorie diet.
Source: U.S. Department of Agriculture, Economic Research Service.

Table 2—Average food supply servings for 1970-96 compared with Food Guide Pyramid serving recommendations

Food group	Servings				Food Guide Pyramid serving recommendation[1]
	1970-75	1980-85	1990-95	1996	
Grains	6.8	7.5	9.2	9.7	9
Vegetables	3.1	3.2	3.6	3.8	4
Fruits	1.1	1.2	1.3	1.3	3
Milk, yogurt, and cheese[2]	1.6	1.5	1.6	1.7	2.2
Meat, poultry, fish, dry beans, eggs, and nuts (ounces)	5.4	5.5	5.6	5.6	6.0
Added fats and oils (grams of fat)[3]	49	55	62	60	38
Added sugars (teaspoons)[4]	27	26	31	32	12

[1]Recommendation based on a 2,200-calorie diet. A 2,200-calorie diet is close to the 2,247 calories recommended as an average caloric intake for the population in 1995. Recommended servings for other years may differ.

[2]Three servings of milk, yogurt, and cheese are appropriate for teenagers and young adults to age 24 and for pregnant and breastfeeding women. Two servings are recommended for other adults.

[3]*The 1995 Dietary Guidelines* recommend that consumers choose a diet that provides no more than 30 percent of total calories from fat. The upper limit on the grams of fat in a consumer's diet will depend on calorie intake. For example, a person consuming 2,200 calories per day, the upper limit on total daily fat intake is 660 calories. Seventy-three grams of fat contribute about 660 calories (73 grams x 9 calories per gram of fat = 660 calories). According to food supply data for 1994, added fats and oils account for 52 percent of the total fat provided by the food supply in that year. The recommendation shown here assumes that added fats and oils account for 52 percent of total fat intake for a daily upper limit of 38 grams of added fats and oils (73 * 0.52) = 38.

[4]To avoid getting too many calories from sugar, dietary guidance suggests that consumers on a 2,200-calorie diet try to limit added sugars to the daily quantity listed.

Source: USDA, Economic Research Service.

Table 3—Food supply bread, cereals, rice, and pasta group servings, 1996

Item	Servings
Total grains	9.7
White and wheat flour	7.2
Durum flour	.4
Rice	.5
Rye flour	*
Corn products	1.3
Corn flour and meal	.9
Corn grits and hominy	.1
Cornstarch	.3
Oat products	.3
Barley products	*

* = less than 0.1 servings. Totals may not add due to rounding.
Source: USDA, Economic Research Service.

remainder of the increased grain group servings.

While the food supply data suggest that average grain consumption meets Food Guide Pyramid serving recommendations, many consumers may need to change the type of foods selected from this group to meet dietary recommendations for fiber, fat, cholesterol, and added sugars. *The Food Guide Pyramid* bulletin recommends that consumers choose several servings per day of foods made from whole grains such as whole-wheat breads and whole-grain cereals (USDA, CNPP, 1996). However, many grain products are relatively high in fats, oils, and added sugars depicted at the tip of the Pyramid and contribute little in the way of fiber and micronutrients found in whole-grain breads, cereals, and other grain products.

In 1992, for example, the latest year for which data on selected whole grains are available for the food supply,[3] whole wheat flour accounted for less than 2 percent of total white and wheat flour provided by the food supply, or the flour equivalent of about one-tenth of a slice of bread per person per day. While the food supply data does not report consumption of other whole-grain products, brown rice for example, the CSFII servings data confirm that consumption of foods made with whole grains is indeed low. Mean daily intake of foods made from whole grains was 1 serving in 1996, well-below the several daily servings suggested by dietary guidance (USDA, ARS, Oct. 1998).

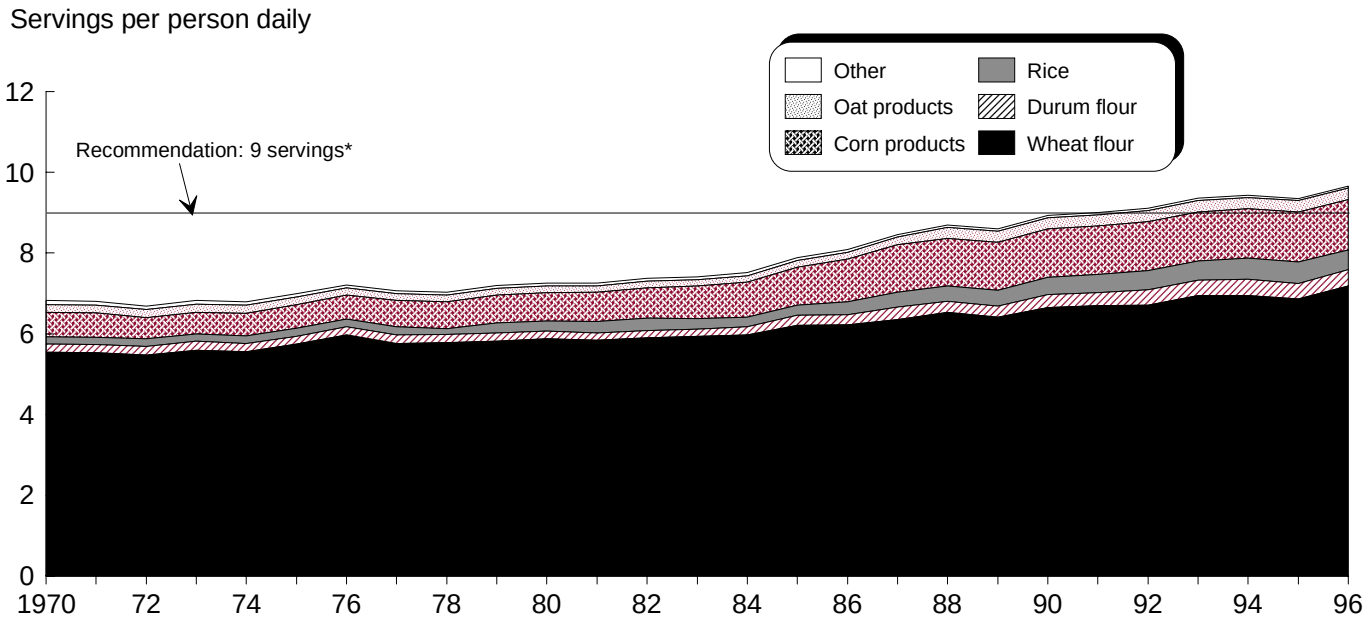
Vegetable Group

The food supply provided a daily average of 3.8 servings of fresh, frozen, canned vegetables, and dry beans, peas, and lentils in 1996, close to the 4 daily servings recommended for a 2,200-calorie diet (table 4).

[3]Data for whole wheat flour is from the 1992 U.S. Census of Manufacturers (U.S. Department of Commerce, 1995).

Figure 5

Bread, cereals, rice, and pasta group: Food supply servings,1970-96



*Recommended servings for a 2,200-calorie diet.
Source: U.S. Department of Agriculture, Economic Research Service.

Table 4—Food supply vegetable group servings, 1996

Item	Servings
Total vegetables	3.8
Dark-green vegetables	.1
Deep yellow vegetables	.2
Dry beans, peas, and lentils	.2
Other starchy vegetables	1.4
Fresh potatoes	.4
Potatoes for freezing	.5
Potatoes for chips/shoestrings	.2
Other vegetables	1.9

Source: USDA, Economic Research Service.

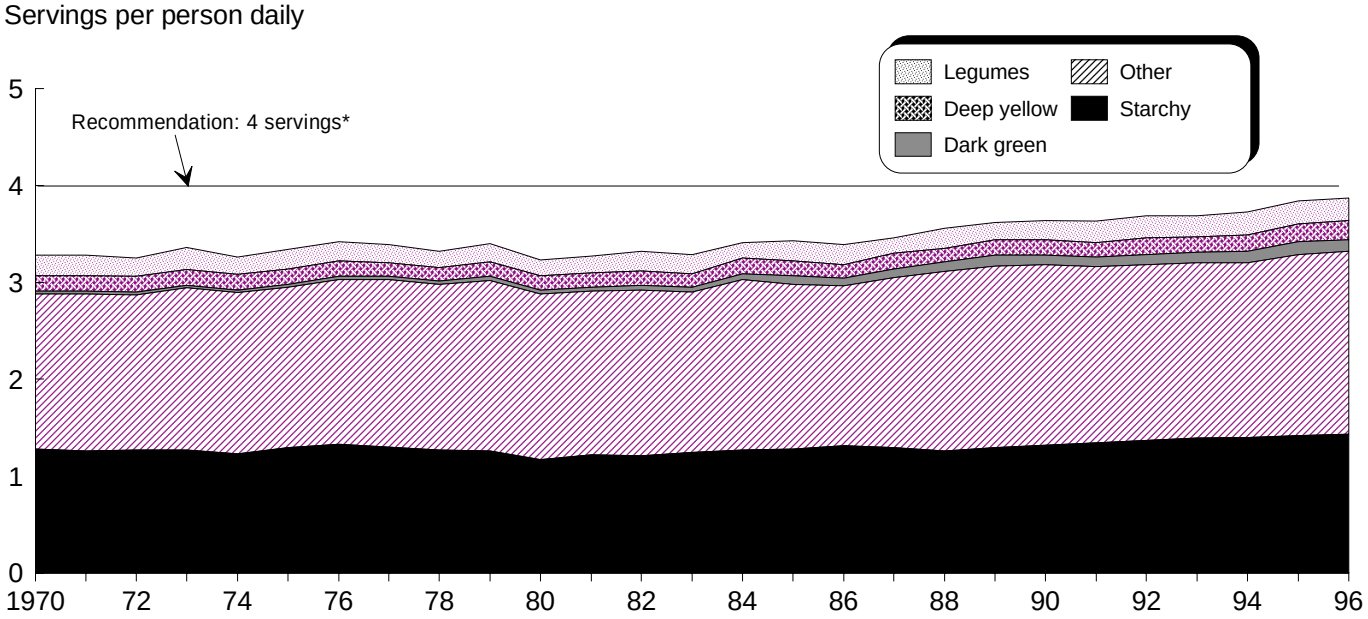
Average consumption grew by about 20 percent, or half a daily vegetable serving between 1970 and 1996 (fig. 6). Half a daily vegetable serving is equivalent to about a one-quarter cup of cooked vegetables, one-quarter of a baked potato, or about five french fries. Supporting documentation for the Food Guide Pyramid suggests that consumers should divide their daily vegetable servings into three vegetable subgroups—dark-green leafy and deep yellow vegetables; starchy vegetables, including dry beans, peas, and lentils; and other vegetables (Cronin and others, 1987). Thus, for a 2,200-calorie diet with a minimum serving recommendation of 4 servings daily, consumption would be expected to be evenly divided at 1.3 servings for each subgroup. Within these groups, dark-green leafy vegetables and dry beans, peas, and lentils should account for 0.6 servings or about three-sevenths of total subgroup consumption and deep yellow and other starchy vegetables should account for 0.8 servings or four-sevenths of their subgroups, respectively.

However, in 1996, average vegetable consumption differed from these recommendations with vegetable servings heavily weighted toward other starchy vegetables, especially white potatoes. Consumption of dark-green and deep yellow vegetables, and dry beans, peas, and lentils was well below recommendations.

The concentration of consumption in a small number of foods within these groups also suggests that consumers may not be incorporating adequate variety into their daily vegetable choices. Although the food supply data for this group include consumption estimates for about 80 different vegetables, only 5 commodities (head lettuce, potatoes for freezing, fresh potatoes, potatoes for chips and shoestrings, and tomatoes for canning) accounted for half of total 1996 vegetable servings (fig. 7). Another 15 percent of total vegetable servings came from potatoes for dehydration, fresh tomatoes, fresh garlic, and fresh carrots. Dry

Figure 6

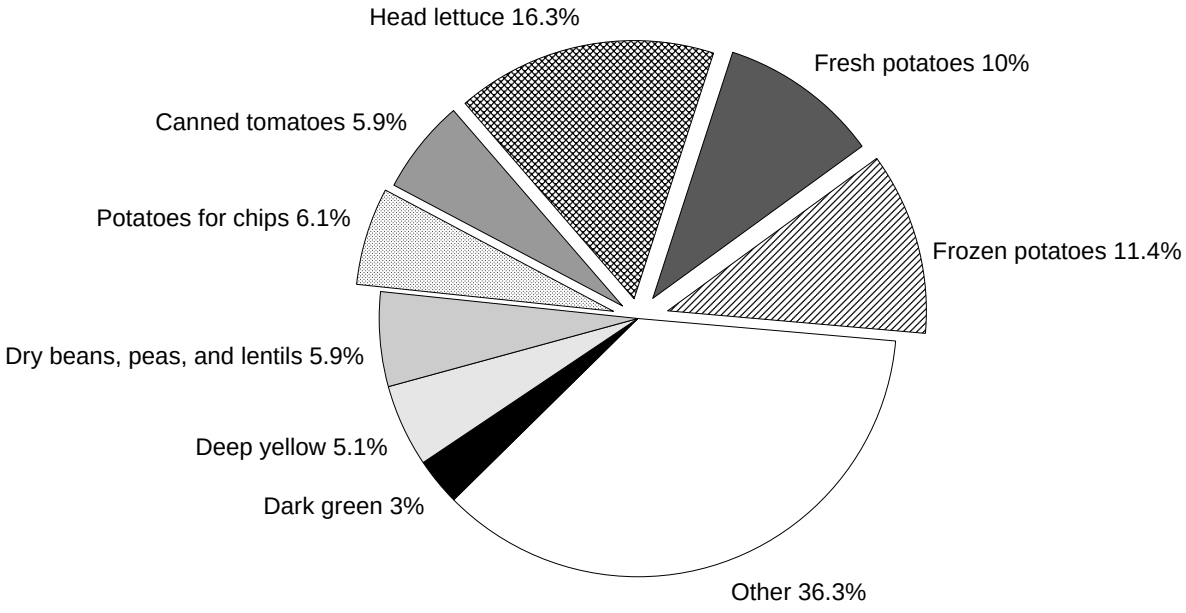
Vegetable group: Food suppy servings, 1970-96



*Recommended servings for a 2,200-calorie diet.
Source: U.S. Department of Agriculture, Economic Research Service.

Figure 7

Five foods accounted for half of total vegetable servings in 1996



Source: U.S. Department of Agriculture, Economic Research Service.

beans, peas, and lentils combined made up a 6-percent share of total consumption. No other single commodity accounted for more than 3 percent of total vegetable servings or 0.1 servings.

Dark-Green Leafy and Deep Yellow Vegetables

Consumers are not incorporating dark-green leafy vegetables into their daily vegetable choices. In 1996, for example, the food supply provided just one-tenth of a daily serving of dark-green leafy vegetables, including broccoli, spinach, Romaine, and other leafy lettuce, less than one-quarter of recommended daily servings.

The shortfall in dark-green leafy vegetable consumption occurred despite a threefold increase in broccoli consumption since 1970. Broccoli and Romaine lettuce accounted for most of the total dark-green leafy vegetable servings provided by the food supply in 1996. Several other vegetables of this type, including fresh collards, kale, chard, mustard, turnip, and beet greens, and frozen and canned spinach, are either not reported at all or are grouped together in an "other" category in the food supply data—suggesting that actual use of these foods may be higher than reported here (see Appendix 2). Efforts are currently underway at ERS to improve these data.

Despite these data limitations, food-intake data confirm that total consumption of dark-green leafy vegetables is below recommendations. According to the 1996 CSFII servings data, mean daily intake of dark-green leafy vegetables was about 0.2 daily servings, or about 6 percent of total vegetable servings (USDA, ARS, Oct. 1998).

The food supply provided less than one-fourth of a daily serving of deep yellow vegetables, or about one-third of recommended servings. More than three-quarters of deep yellow vegetable servings were from fresh, frozen, and canned carrots.

Dry Beans, Peas, and Lentils and Other Starchy Vegetables

The food supply provided 1.6 servings of starchy vegetables (potatoes, corn, dry beans, peas, and lentils, and green peas) in 1996, 19 percent above recommended servings for this subgroup. Consumption was heavily weighted toward white potatoes and other starchy vegetables, which together accounted for 1.4 servings daily. Frozen potatoes—used mainly for french fries—and potatoes for potato chips and shoestrings, accounted for more than one-third of total starchy vegetable servings and along with dehydrated potatoes, accounted for most of the growth in starchy vegetable consumption between 1980 and 1996.

Average consumption of dry beans, peas, and lentils was one-third of recommended levels with the food supply providing about one-quarter serving of cooked legumes per day. More than 90 percent of total servings were from dry beans, with recent growth led by increased consumption of pinto beans for Mexican-style foods (USDA, ERS, June 1997).

Fruit Group

The food supply provided 1.3 servings per person per day of fresh and processed fruits and fruit juices in 1996, just under half the Food Guide Pyramid's 3-serving recommendation for a 2,200-calorie diet (table 5). This shortfall is particularly troublesome given scientific studies linking frequent consumption of fruits and vegetables with substantially lower risk of many chronic diseases, including certain types of cancer (USDA/HHS, 1995).

Like vegetables, the number of fruit servings provided by the food supply has increased about 20 percent since the early 1970's, or about one-quarter of a serving (fig. 8). One-quarter of a fruit serving is equal to about one-quarter of a medium banana or apple per person per day, one and a half ounces of fruit juice, or one-eighth of a cup canned or frozen fruit.

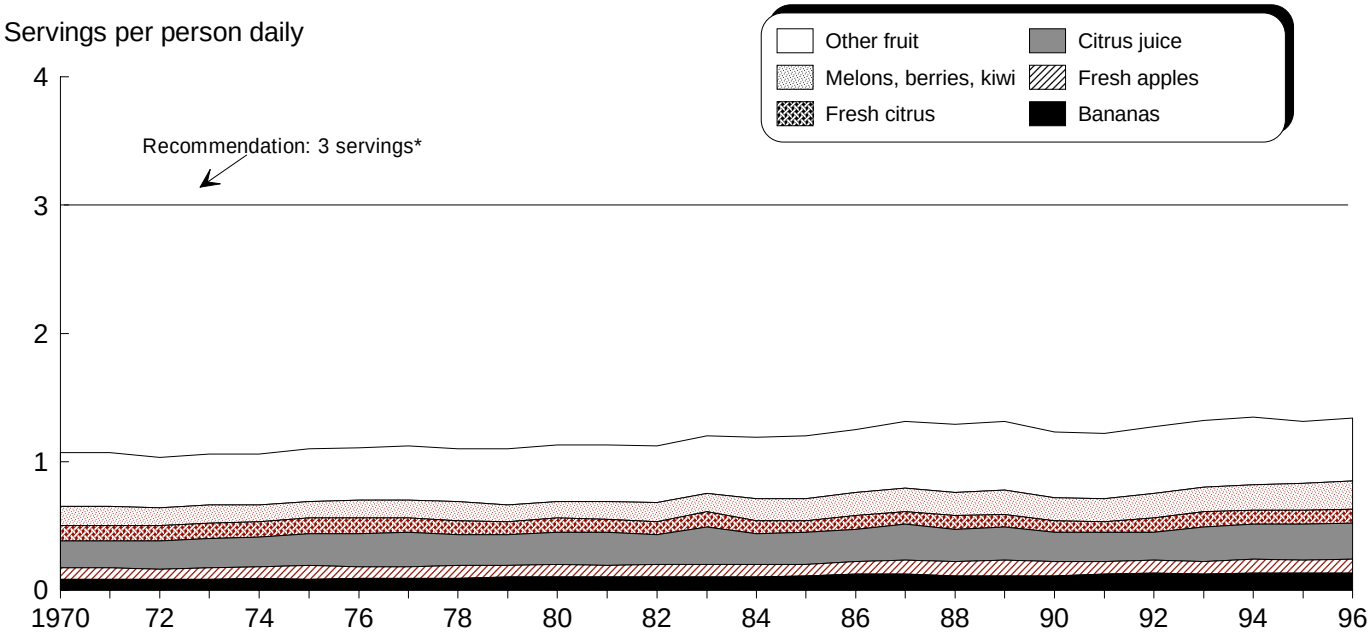
Consistent with recommendations, total fruit servings were almost evenly divided between two fruit sub-

Table 5—Food supply fruit group servings, 1996

Item	Servings
Total fruit	1.3
Citrus, melons, and berries	.6
Fresh citrus	.1
Melons, berries, kiwi	.2
Citrus juice	.3
Other fruits	.7
Fresh apples	.1
Fresh bananas	.1

Source: USDA, Economic Research Service.

Figure 8
Fruit group: Food suppy servings, 1970-96



*Recommended servings for a 2,200-calorie diet.
Source: U.S. Department of Agriculture, Economic Research Service.

groups—citrus, melons, and berries, including kiwifruit (0.6 servings) and other fruit (0.7 servings). However, with half of total fruit servings coming from six foods—orange juice (18 percent), bananas (9.8 percent), fresh apples (7.9 percent), watermelon (6.5 percent), apple juice (5.8 percent), and fresh grapes (5.1 percent)—the data suggest that many consumers may not be incorporating adequate variety into their daily fruit choices.

Milk, Yogurt, and Cheese Group

Milk, yogurt, cheese, and other dairy products are the primary source of calcium in most people's diets, accounting for 73 percent of the calcium available in the food supply in 1994 (USDA, CNPP, 1997). Other sources of dietary calcium included fruits and vegetables (9 percent), grain products (5 percent), and other foods (12 percent). Calcium is essential for the formation of bones and teeth, and requirements increase significantly during adolescence, early adulthood, pregnancy, and lactation. Inadequate calcium intake appears to be an important risk factor for osteoporosis, a disease that weakens the body's bone structure and is responsible for more than 1 million fractures of the hip, wrist, and spine each year (Frazao, 1995).

As a result, the dairy group is the only food group for which Food Guide Pyramid serving recommendations are based on age and physiological status rather than energy intake. Three servings—the equivalent of three 8-ounce glasses of milk per day—are suggested for teenagers, young adults up to 24 years of age, and pregnant and lactating women. Two daily servings of dairy foods are recommended for children and most other adults.

In this study, average servings were compared with a daily recommended intake of 2.2 servings. This target was based on a weighted average of recommended servings for different age groups of the U.S. population (excluding the higher needs of pregnant and lactating women). In 1996, the food supply provided 1.7 servings of dairy foods (excluding cream cheese and fluid cream which are counted as added fats depicted at the top of the Pyramid), suggesting that most Americans are not meeting this target (table 6). Total servings have remained nearly constant since 1970 (fig. 9).

Many dairy foods, however, are naturally high in fat and saturated fat. Thus, consumers may need to balance any increased dairy consumption with total fat intake. More than half of the dairy servings in the

Table 6—Food supply servings for the milk, yogurt, and cheese group, 1996

Item	Servings
Total milk, yogurt, and cheese	1.7
Fluid milk	.8
Cheese	.6
Yogurt	*
Frozen dairy	.1
Condensed and evaporated milk	*
Dry milk	.1

* = less than 0.1 servings.
Source: USDA, Economic Research Service.

food supply in 1996 came from two dairy products that are naturally high in fat—cheese (natural and processed) (38 percent) and whole milk (including dry and condensed) (16 percent), while skim milk (including dry and condensed) (16 percent), 1-percent milk (5 percent), and buttermilk and yogurt (mostly lowfat) (2 percent) accounted for nearly one-quarter of total dairy servings. Reduced-fat, 2-percent milk accounted for 15 percent of dairy servings, while ice cream and other frozen dairy desserts made up another 4 percent of the total.

Sharp changes over time in consumption patterns for fluid milk and cheese also suggest that many consumers may simply be substituting one high-fat dairy food for another with little net reduction in total dairy fat intake (fig. 10). For example, between 1982-86 and 1992-96, Americans reduced their average daily consumption of whole milk by more than one-third to just over one-quarter cups. Consumption of lowfat milk (skim and 1-percent) nearly doubled during this same period, but consumption is still relatively low, at less than one-fifth of a cup per person daily. Consumption of reduced-fat, 2-percent milk increased by 13 percent to just over one-quarter cups. However, during the same time period, declining whole milk consumption was accompanied by a sharp 20-percent increase in per capita consumption of cheese, most of which is nearly as high or higher in total and saturated fat per serving as whole milk. This is consistent with food supply nutrient data that show that total fat and saturated fat from dairy products remained constant between 1970 and 1994 (USDA, CNPP, 1997).

The food supply data do not measure how much rising cheese consumption is due to the increased use of reduced-fat and nonfat cheese. However, a recent ERS study of supermarket scanner data reported that consumption of nutritionally improved cheese increased from 12 to 19 percent of total cheese volume between 1989 and 1993 (Frazao and Allshouse, 1996), suggesting that more than three-fourths of total cheese servings continue to come from full fat products. This is consistent with servings estimates from the 1989-91 CSFII, which indicated that 80 percent of total cheese servings consumed by adults were regular, rather than low-fat products (Cleveland and others, 1995).

Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts Group

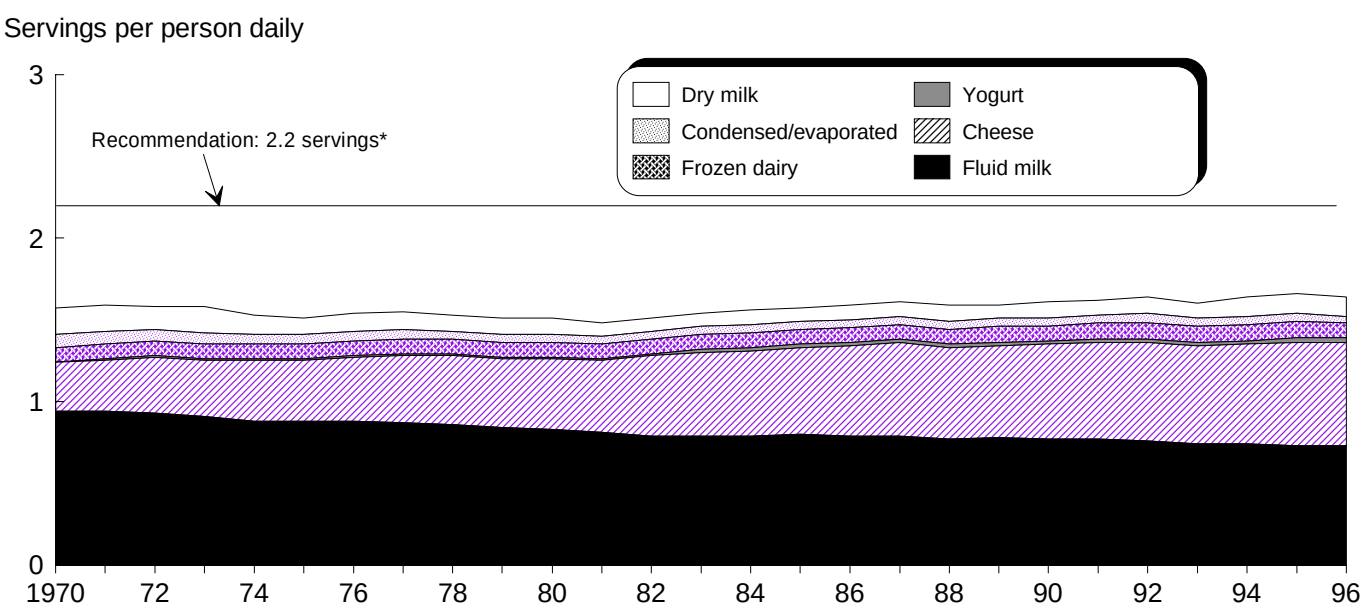
Total consumption of foods in the meat, poultry, fish, dry beans, eggs, and nuts group (meat group) in 1996 was close to the level needed to provide most consumers with their recommended intake for this group for a 2,200-calorie diet. The Food Guide Pyramid recommends that average meat group consumption should equal 6 ounces of cooked lean meat per person per day for a 2,200-calorie diet. According to *The Food Guide Pyramid* bulletin, consumers should count meat, poultry, and fish in total ounces. Other foods in this group—1 egg, 2 tablespoons of peanut butter, or one-third cup of nuts—are counted as the equivalent of 1 ounce of cooked lean meat.

After adjusting for waste and cooking losses, the food supply provided the equivalent of 5.6 ounces of cooked meat (lean and fat portion) per day—unchanged since the mid 1980's (fig. 11). Even though total meat group servings were close to the recommended 6 daily ounces, many people may need to adjust the type of foods consumed from this group in order to choose diets with less total fat, saturated fat, and cholesterol (USDA/HHS, 1995). According to the 1995 Dietary Guidelines, choosing lower fat options among foods in the meat and dairy groups allows consumers to eat the recommended servings from these groups and increase the amount and variety of grain products, fruits, and vegetables in their diets without going over their calorie needs (USDA/HHS, 1995).

Because the food supply estimates for meat and poultry include both the lean and fat portion of these products, they likely overstate lean meat consumption and are not directly comparable with the Food Guide Pyramid recommendation (table 7). Also, the food supply series does not report supplies of individual meat products such as steaks or hot dogs, or the amount of lean meat vs. meat fat consumed.

Figure 9

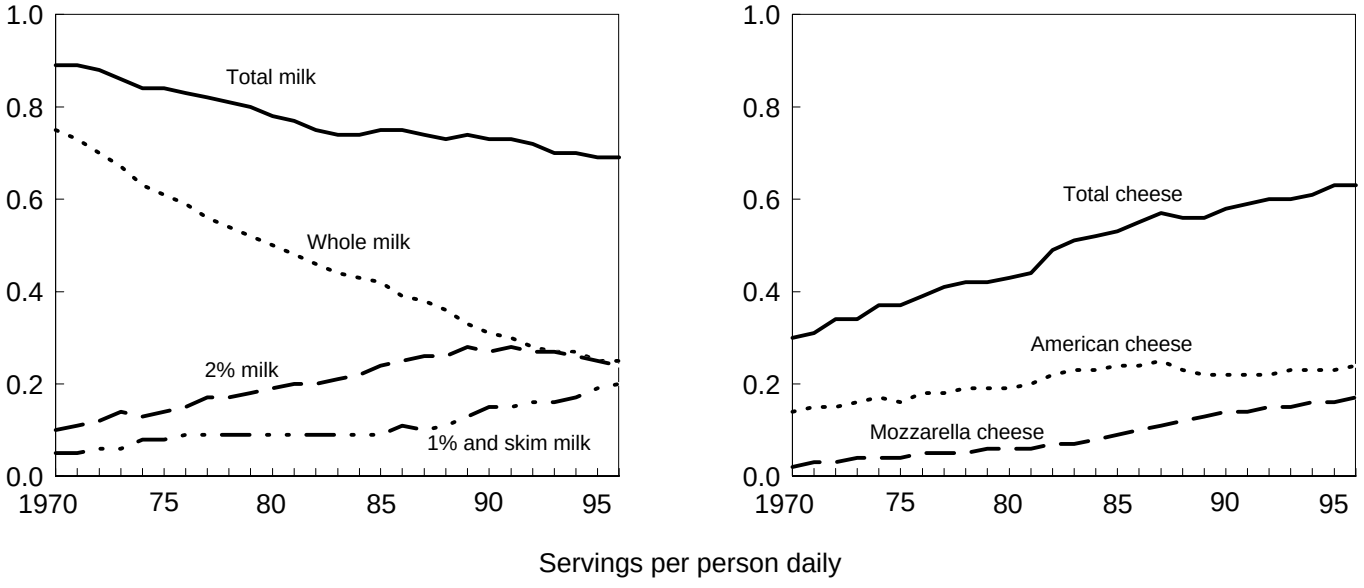
Milk, yogurt, and cheese group: Food suppy servings, 1970-96



*Recommended servings based on weighted average of recommended servings for different age groups of the U.S. population, excluding the higher needs of pregnant and lactating women.
Source: U.S. Department of Agriculture, Economic Research Service.

Figure 10

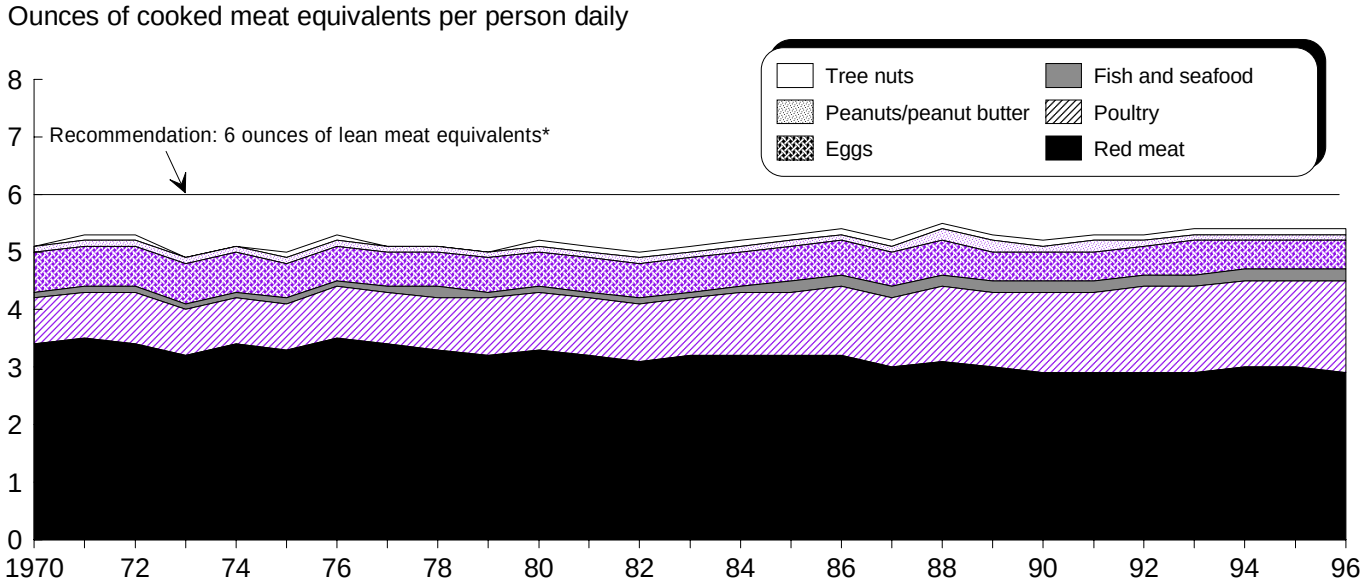
Selected dairy products: Food supply servings, 1970-96



Source: U.S. Department of Agriculture, Economic Research Service.

Figure 11

Meat, poultry, fish, dry beans, eggs, and nuts group: Food suppy servings, 1970-96



*Recommended servings for a 2,200-calorie diet.
Source: U.S. Department of Agriculture, Economic Research Service.

Table 7—Food supply servings for the meat, poultry, fish, dry beans, eggs, and nuts group, 1996

Item	Ounces
Total meat group	5.6
Meat, poultry, and fish	4.9
Red meat	2.9
Poultry	1.6
Fish and seafood	.4
Eggs	.5
Peanuts and peanut butter	.1
Tree nuts	.1
Dry beans, peas, and lentils[1]	

[1]Counted in the vegetable group.
Source: USDA, Economic Research Service.

However, the aggregate commodity data suggest that on average, the food supply provided larger quantities of foods, that relative to others in the group, are naturally high in fat, saturated fat, and cholesterol. For example, despite a nearly 36-percent increase in poultry meat (chicken and turkey) servings since 1982-86, red meat (beef, veal, pork, and lamb) accounted for 52 percent of total meat equivalent servings in 1996, double the 27-percent poultry share. Fish and shellfish accounted for 7 percent of total supplies, while about 9 percent of meat group servings came from eggs. Another 2 percent of meat group servings came from peanut butter.

In recent years, meat producers and meatpackers, responding to consumer demand for lower fat meats, have made strides in reducing the fat content of their products. Production practices that incorporate advanced breeding techniques are resulting in leaner cattle and hogs. Meatpackers and food retailers are trimming more external fat, often leaving only one-quarter inch or less on the retail product, compared with an average of one-half inch to 1 inch 10 years ago. As a result, beef and pork are now significantly leaner than they were in 1980. Although these changes in fat trim are reflected in the food supply data (Duewer, Krause, and Nelson, 1993; Putnam and Allshouse, 1997; Putnam and Duewer, 1995), red meat's fat content is widely variable; only the leanest cuts are as low in fat as broiled fish or skinless chicken breast.

The addition of dry beans, peas, and lentils to the meat group would increase total daily meat group servings slightly from 5.6 to 5.8 ounces. *The Food Guide Pyramid* bulletin states that consumers should choose several servings per week of these foods as

vegetable servings and select them often as choices from the meat group (USDA, CNPP, 1996). Previous dietary assessments have implied that the "several" recommendation is equal to about one-seventh of total daily vegetable servings, or about 0.6 daily servings for a 2,200-calorie diet (Cleveland and others, 1997) (see "Vegetable Group," page 15). However, with total daily consumption of less than one-quarter of a daily serving, supplies were well below the 0.6 daily servings to meet the vegetable group recommendation and were even further short of the combined quantity needed to also supply regular servings of these foods as a protein choice from the meat group.

Dry beans, peas, and lentils offer consumers a relatively low-cost, low-fat, and high-fiber alternative to meat, poultry, and fish. Together with nuts and seeds, these products are naturally high in several vitamins and minerals, including magnesium and folate, which are present in relatively small quantities in animal products and seafood.

The Pyramid Tip: Added Fats and Oils

After adjusting for waste, the food supply provided 60 fat grams of added fats and oils in 1996, a 6-percent increase from the 56 grams available for consumption daily in 1982-86 (table 8).

Added fats and oils are added in cooking and at the table and food manufacturers use them in many processed food products, including baked goods, french fries, snack foods, and peanut butter. They include margarine, shortening, salad oils and dressings, lard, edible tallow, and dairy fats (butter, sour cream, cream and neufchatel cheese, light cream, heavy cream, and half and half). These fats are consumed in addition to those that occur naturally in foods like meats, fish, nuts, eggs, and dairy foods.

Although some dietary fat is essential for good health, excessive fat intake is associated with increased blood cholesterol, heart disease, and some cancers. The *1995 Dietary Guidelines* recommend that people limit total fat consumption to no more than 30 percent of daily energy intake—about 73 grams for a 2,200-calorie diet (USDA/HHS, 1995). Mono- and polyunsaturated fats, such as those found in high quantities in most vegetable oils, should account for at least two-thirds of this intake. Saturated fats—which are found in larger amounts in animal fats such as butter, lard, and fluid cream products—should account for no more than one-third of total fat consumption.

Table 8—Food supply servings of added fats and oils, 1996

Item	Fat grams
Total nutrient fat from added fats and oils	60.2
Margarine	7.1
Shortening	17.8
Salad and cooking oils	25.6
Lard	1.4
Edible tallow	1.4
Other	1.6
Dairy fats	5.3
Butter	3.3
Heavy cream	.5
Light cream	.1
Sour cream	.5
Half and half	.3
Cream and neufchatel cheese	.6

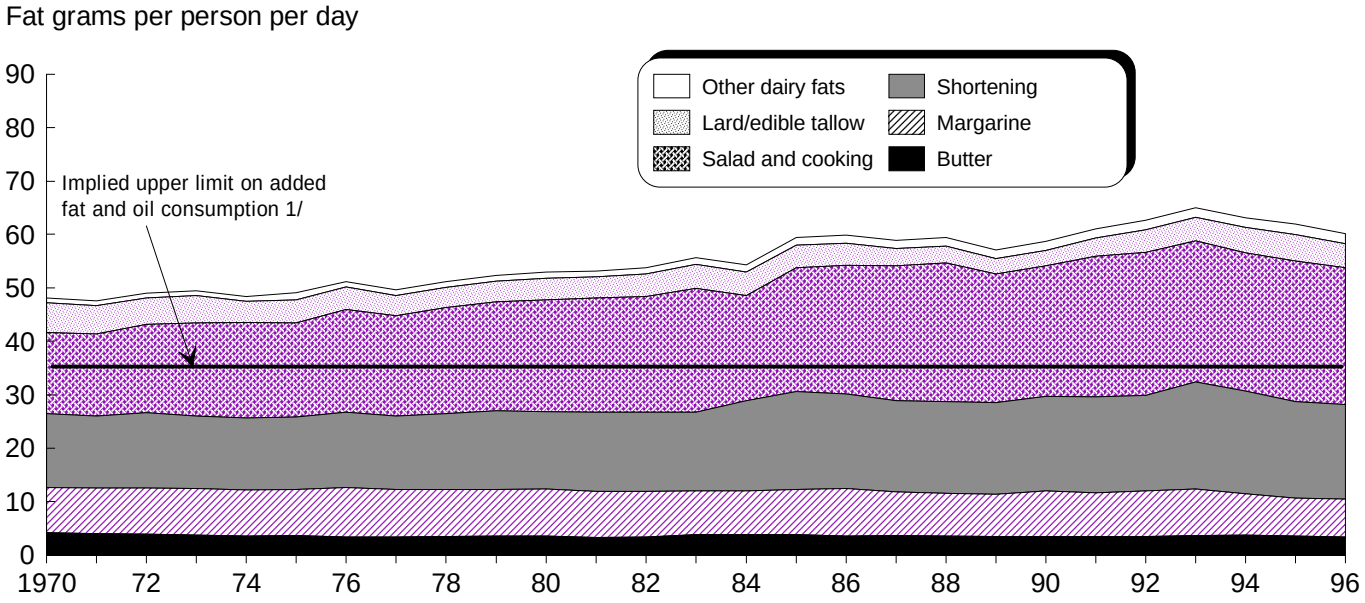
Source: USDA, Economic Research Service.

The food supply data suggest that most consumers are not meeting these recommendations. In 1996, fat grams from added fats and oils alone accounted for 82 percent of the recommended upper daily limit for total fat intake—or about 33 percent of total calories for a 2,200-calorie diet. Salad and cooking oils and shortening accounted for more than two-thirds of total added fat and oil servings and for nearly all of the increase in added fat and oil consumption since the early-1980's (fig. 12). Animal fats—butter and other dairy fats, lard (direct use), and edible tallow—accounted for 16 percent of total servings. Lard and edible tallow, together with shortening, are used largely for deep-fat frying by fast-food restaurants and other foodservice establishments.

According to food supply nutrient data for 1994, added fats and oils accounted for 52 percent of the total fat provided by the food supply (Putnam and Allshouse, 1997). Assuming that added fats continue to account for about 52 percent of the total fat provided daily by the food supply, the quantity of added fats and oils available for human consumption would have to decline by more than one-third to bring added fat consumption to 38 grams (73 grams of total fat x 0.52 = 38 grams of added fats) and total fat consumption close to the recommended upper limit of 30 percent of calories per day.

Figure 12

Added fats and oils: Food suppy servings, 1970-96



1/Implied upper limit assumes 2,200-calorie diet and that added fats account for 52 percent of suggested upper limit on total fat intake of 73 grams or 30 percent of calories.
Source: U.S. Department of Agriculture, Economic Research Service.

The Pyramid Tip: Added Sugars

The food supply data for added sugars and other caloric sweeteners measure the delivery of caloric sweeteners (refined cane and beet sugar, corn sweeteners, and edible syrups) to U.S. food and beverage manufacturers (table 9).

These sweeteners are subsequently used in processed products such as baked goods, breakfast cereals, candy, and soft drinks, and are distributed by food wholesalers and retailers for individual and household use. Except for table sugar, the data do not measure the consumption of individual products, like cola or chocolate bars, identified as "sweets," in *The Food Guide Pyramid* bulletin.

The food supply provided an average of 32 teaspoons of caloric sweeteners (dry-weight basis) daily in 1996, or the sweetener equivalent of about three and one-half 12-ounce regular soft drinks per person per day (table 10). Average consumption was more than two and one-half times the 12 teaspoons of added sugars suggested as an upper limit for a 2,200-calorie diet in *The Food Guide Pyramid* bulletin. A sharp rise in the use of High Fructose Corn Syrup and other sweeteners beginning in the mid-1980's was largely offset by declining use of refined cane and beet sugar, resulting in a 16-percent increase in caloric sweetener consumption from the 27 teaspoons provided by the food supply in 1982-86 (fig. 13).

Table 9—U.S. sweetener deliveries for human consumption by type of user, 1995

Item	Million pounds
Cane and beet sugar (refined value):*	
Bakery, cereal, and allied products	3,810
Confectionary and related products	2,744
Ice cream and dairy products	904
Beverages	338
Canned and bottled and frozen foods	558
All other food uses	1,726
Corn sweeteners (dry-weight basis):**	
Cereal and bakery products	910
Confectionary and related products	112
Processed foods	1,640
Dairy products	474
Beverages	11,274
All other food uses	1,054

*Includes refined, liquid, edible molasses, sugar and cane syrups.
**HFCS-42, HFCS-55.
Source: USDA, Economic Research Service, *Sugar and Sweetener Yearbook*, 1996.

Although the human body cannot distinguish between naturally occurring and added sugars, dietary guid-

ance focuses on added sugars because foods high in added sugars often supply additional calories but few nutrients. For example, the *1995 Dietary Guidelines* caution consumers about eating sugars in large amounts and about frequent snacks of food and beverages containing sugars that supply unnecessary calories and few nutrients (USDA/HHS, 1995; USDA, CNPP, 1996). To the extent that consumers substitute the calories from less nutrient dense sugary snacks, sweetened soft drinks, and baked goods, for nutrient-rich foods like fruits, vegetables, and whole grains, dietary intake of fiber, and vitamins, minerals, and other nutrients found in these foods may be reduced. To maintain nutritious diets and healthy weights, the 1995 Dietary Guidelines suggest that sugars be used in moderation by most healthy people and sparingly by people with low caloric needs (USDA/HHS, 1995).

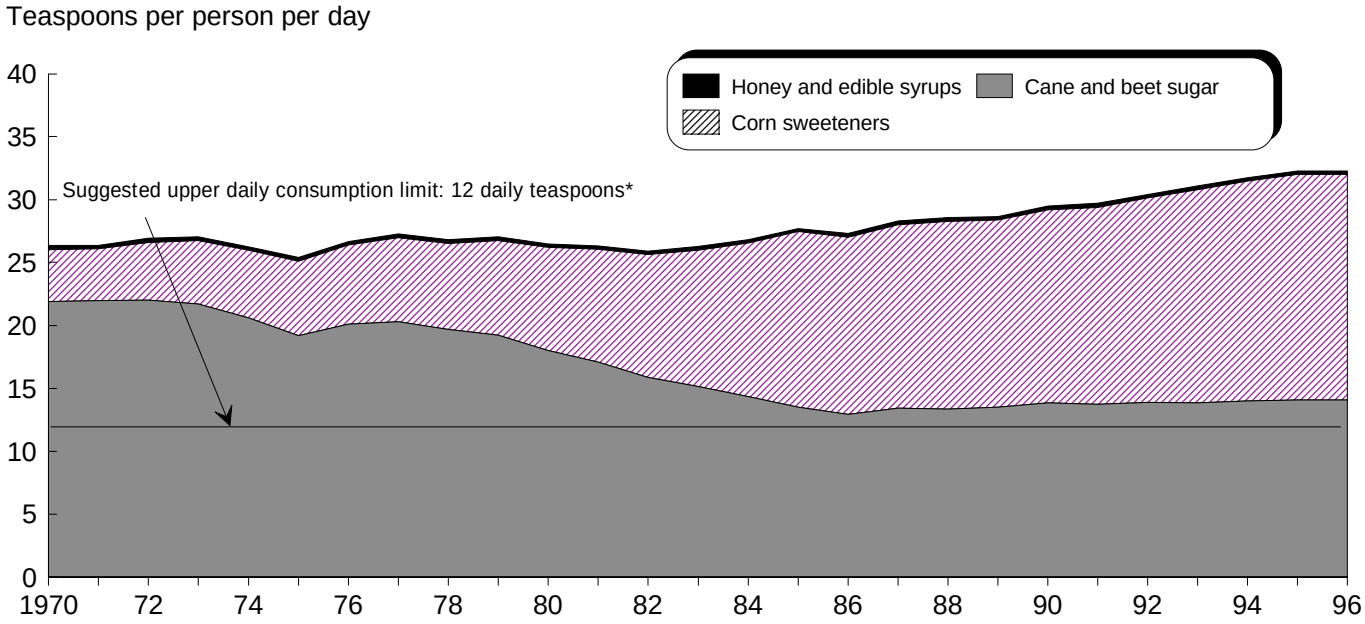
Table 10—Food supply servings of added sugars, 1996

Item	Teaspoons
Total caloric sweeteners	32
Cane and beet sugar	14
High Fructose Corn Syrup	13
Glucose	4
Dextrose	.8
Edible syrups	.1
Honey	.2

Source: USDA, Economic Research Service.

Consumers' ability to moderately consume foods high in sugars and to limit amounts of added sugars to levels suggested by dietary guidance is complicated because many added sugars are likely to be "hidden" in prepared foods. Although the new food label mandated by the National Nutrition Labeling and Education Act (U.S. Department of Health and Human Services, Food and Drug Administration, 1997) requires manufacturers to disclose the total sugar content of food, the label does not distinguish total from added sugars, which may sometimes make it difficult for consumers to determine how much added sugar they are actually consuming.

Figure 13
Added sugars: Food suppy servings, 1970-96



*Recommended upper limit for a 2,200-calorie diet.
Source: U.S. Department of Agriculture, Economic Research Service.