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United States
Department
of Agriculture

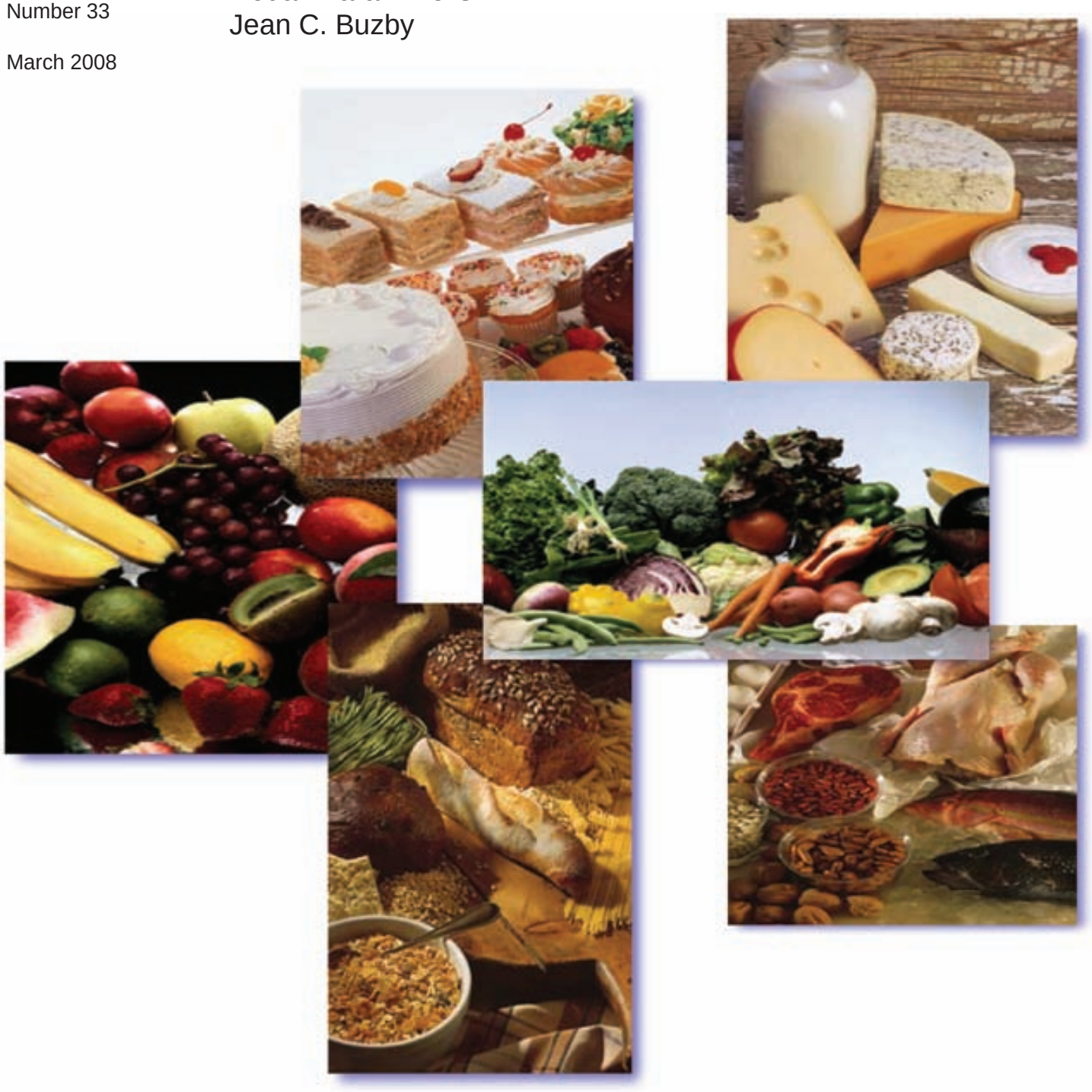
Economic
Research
Service

Economic
Information
Bulletin
Number 33

March 2008

Dietary Assessment of Major Trends in U.S. Food Consumption, 1970-2005

Hodan Farah Wells
Jean C. Buzby



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Wells, Hodan Farah
Dietary assessment of major trends in U.S. food consumption, 1970-2005.
(Economic information bulletin ; no. 33)
1. Americans—Nutrition--Requirements. 2. Diet—United States.
3. Food consumption—United States. 4. Food supply—United States.
I. Buzby, Jean C. II. United States. Dept. of Agriculture. Economic Research Service.
III. Title.
TX360.U6

Cover photo credits: EyeWire

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United States Department of Agriculture

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A Report from the Economic Research Service

www.ers.usda.gov

Dietary Assessment of Major Trends in U.S. Food Consumption, 1970-2005

Hodan Farah Wells and Jean C. Buzby

Abstract

This report examines major trends in the amount of food available for consumption in the United States between 1970 and 2005 using data from the ERS Food Availability (Per Capita) Data System. The report also estimates whether Americans are meeting Federal dietary recommendations for each of the major food groups by comparing the data with dietary recommendations in the *2005 Dietary Guidelines for Americans* and the MyPyramid Food Guidance System. Findings show that Americans do not meet the Federal dietary recommendations. In order to meet them, Americans would need to substantially lower their intake of added fats, refined grains, and added sugars and sweeteners and increase their consumption of fruits, vegetables, whole grains, and low-fat milk and milk products.

Keywords: Agriculture, added fats and oils, added sugars and sweeteners, dairy, *Dietary Guidelines for Americans*, dietary recommendations, eggs, food, food consumption, fruits, meat, MyPyramid Food Guidance System, nutrients, grains, nuts, vegetables.

Acknowledgments

The authors gratefully acknowledge the valuable assistance and data from Mark Ash, Allen Baker, Don Blayney, Nathan Childs, Erik Dohlman, Steve Haley, David Harvey, Alberto Jerardo, Keithly Jones, Gary Lucier, Agnes Perez, Susan Pollack, Fawzi Taha, and Gary Vocke from the U.S. Department of Agriculture, Economic Research Service, and Steve Koplin from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

Recommended format for citation:
Wells, Hodan F., and Jean C. Buzby. *Dietary Assessment of Major Trends in U.S. Food Consumption, 1970-2005*, Economic Information Bulletin No. 33. Economic Research Service, U.S. Dept. of Agriculture. March 2008.

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Summary

The U.S. obesity rate among adults has more than doubled since 1970. The extent of obesity in this country has focused attention on what Americans have been eating. Americans are eating more from all of the major food groups—even fruits and vegetables. However, many are not meeting the Federal dietary recommendations. For Americans to meet these recommendations, they would need to substantially lower their intake of added fats, refined grains, and added sugars and sweeteners and increase their consumption of fruits, vegetables, whole grains, and lower fat milk and milk products.

What Is the Issue?

According to the National Center for Health Statistics, about two-thirds of U.S. adults in 2003-04 were either overweight or obese, compared with 47 percent in 1976-80. During the same period, the obesity rate among adult Americans has more than doubled, from 15 percent to 32 percent. This raises questions about what and how much Americans are consuming each year.

What Did the Study Find?

ERS's food availability data suggest that the food available for consumption increased since 1970 for all major food groups. Although availability continued to rise in the last three decades, many Americans still fall short of Federal dietary recommendations for certain food groups. According to ERS's loss-adjusted food availability data, Americans are consuming too many foods and beverages high in fats and carbohydrates and too few nutrient-dense foods and beverages, such as lower fat milk and milk products, fruits, and vegetables.

Grains. Total grain availability (wheat flour, rice, corn products, oat products, and barley products) increased 41 percent, from 137 pounds per person in 1970 to 192 pounds per person in 2005. For Americans on a 2,000-calorie-per-day diet, the *2005 Dietary Guidelines for Americans* recommend consumption of 6 ounce-equivalents (oz-eq) of grains per day with whole grains accounting for at least half of this amount. Using ERS's loss-adjusted food availability data, the researchers estimated that Americans on a 2,000-calorie-per day diet consumed 8.1 oz-eq of grains per person per day in 2005 of which 7.2 oz-eq were refined grains and 0.9 oz-eq were whole grains. This suggests that Americans, on average, over-consume refined grains yet fall short on whole-grain intake.

Fruits and Vegetables. In 2005, the amount of fruits and vegetables available per person for consumption reached 687 pounds (fresh weight equivalent), 19 percent above the 1970 level. The *Dietary Guidelines* recommend that Americans eat 2 cups of fruits and 2.5 cups of vegetables per person per day as part of a 2,000-calorie-per-day diet. The loss-adjusted food availability data suggest that Americans on a 2,000-calorie-per-day diet consumed 0.9 cup of fruits and 1.7 cups of vegetables per person per day in 2005. Thus, Americans, on average, are eating less than the recommended amounts.

Milk and Milk Products. The availability of all milk and milk products increased 6 percent, from 564 pounds per person (milk equivalent) in 1970 to about 601 pounds per person in 2005. The 2005 *Dietary Guidelines* recommend that Americans consume 3 cups of milk and milk products per person per day as part of a 2,000-calorie-per-day diet. Using the loss-adjusted food availability data, the researchers estimated that Americans on a 2,000-calorie-per-day diet consumed 1.8 cups of milk and milk products per person per day in 2005, suggesting that Americans, on average, are consuming too little.

Added Fats and Oils. The *Dietary Guidelines* recommend that Americans keep total fat consumption between 20 and 35 percent of daily energy intake. In 2005, total added fats and oils available for consumption reached 86 pounds per person compared with 53 pounds per person in 1970. This 2005 estimate translates into 71.6 grams of added fats and oils per person per day after adjusting for plate waste and other losses. This estimate does not include dietary fats that occur naturally in foods, such as in dairy products and meats. Added fats and oils account for about 32 percent of total calories for a 2,000-calorie-per-day diet. In short, the findings suggest that Americans, on average, need to cut back on added fats and oils because, while the 32-percent figure is within the *Guidelines'* range, it includes only added fats and oils and excludes fats and oils naturally present in some foods.

Meat, Eggs, and Nuts. The total amount of meat, eggs, and nuts available for consumption grew from 225 pounds per person in 1970 to about 242 pounds per person in 2005. The *Dietary Guidelines* recommend 5.5 oz-eq from the meat and beans group per person per day as part of a 2,000-calorie-per-day diet. According to the loss-adjusted food availability data, Americans on a 2,000-calorie-per-day diet consumed an estimated 6.5 oz-eq of meat, poultry, fish, eggs, and nuts per person per day in 2005. This suggests that Americans, on average, eat more than the recommended amount from this food group.

Added Sugars and Sweeteners. In 2005, added sugars and sweeteners available for consumption totaled 142 pounds per person, up 19 percent since 1970. The *Dietary Guidelines* do not provide quantitative recommendations for added sugars but rather advise Americans to choose and prepare foods and beverages with little added sugars or caloric sweeteners. The *Guidelines* do, however, suggest that Americans on a 2,000-calorie-per-day diet, who divide their discretionary calorie allowance equally between solid fats and added sugars, limit consumption of added sugars and sweeteners to 8 teaspoons per day. According to the loss-adjusted food availability data, Americans consumed 30 teaspoons per person per day of added sugars and sweeteners in 2005. This finding suggests that Americans, on average, need to scale back on added sugars and sweeteners.

How Was the Study Conducted?

The analysis used the three data series that comprise ERS's Food Availability (Per Capita) Data System to analyze the amount of food available for consumption and the dietary status of Americans. The first series, the core Food Availability data, is the only source of time series data on the food available for human consumption in the United States. This series measures supplies moving through production and trade channels for domestic consumption. It is not a direct measure of actual consumption but is useful to understand trends over time. The analysis used this series to examine the amount of food available for consumption per capita.

The second series, the Loss-Adjusted Food Availability data, adjusts the Food Availability data for spoilage and other losses and converts the data to daily per capita amounts for comparison with Federal dietary recommendations. This series is useful in approximating the amount of food Americans, on average, consume on a daily basis and in estimating whether Americans are meeting the Federal dietary recommendations for each food group and for oils.

The third series, the Nutrient Availability data, calculated by USDA's Center for Nutrition Policy and Promotion, uses the Food Availability data to calculate the amounts per capita per day of food energy (calories) and 27 nutrients and dietary components (i.e., protein, carbohydrates, fats, vitamins, and minerals) in the Nation's food supply. The analysis used the nutrient availability data to estimate the percent of calories contributed by fat and saturated fat in the average American's diet.

Introduction

According to the National Center for Health Statistics, about two-thirds of U.S. adults in 2003-04 were either overweight or obese, compared with 47 percent in 1976-1980. The U.S. obesity rate among adults has more than doubled, from 15 percent in 1976-1980 to 32 percent in 2003-04. The extent of obesity has focused attention on what Americans have been eating. The main reason for this weight gain is the estimated increase in caloric intake without a corresponding increase in physical activity. More than 50 percent of U.S. adults are not physically active. Poor diets and sedentary lifestyles have been associated with diet-related chronic diseases in adults that include hypertension, type 2 diabetes, cardiovascular disease, and certain kinds of cancer (HHS, 2005).

In an effort to promote a healthy, balanced diet with adequate physical activity and to reduce the incidence of diet-related health conditions, the U.S. Department of Agriculture and U.S. Department of Health and Human Services publish jointly the *Dietary Guidelines for Americans*. Since its inception in 1980, the *Guidelines* has been published every 5 years to provide targeted dietary recommendations for Americans over 2 years of age. Although the core dietary messages have remained constant over time (e.g., eat more vegetables), each edition differs slightly to reflect the latest scientific and medical information on nutrition and health. For example, the January 2005 *Guidelines* and a supporting guidance document, the MyPyramid Food Guidance System, introduced specific recommendations for whole-grain consumption. The 2005 edition also breaks down the new daily recommendations into 12 calorie levels ranging from 1,000 to 3,200 calories per day, depending on age, gender, and level of physical activity (table 1). The MyPyramid Food Guidance System replaced the 1992 Food Guide Pyramid and is designed to help Americans consume the recommended amounts of the different food groups.

Among the major recommendations in 2005:

- Grains—emphasize that at least half of total grains consumed should be whole grains,
- Vegetables—emphasize dark green vegetables, orange vegetables, and legumes (i.e., dry beans, peas, or lentils[1]),
- Fruits—emphasize variety and "go easy" on fruit juices,
- Milk—emphasize fat-free and low-fat milk and milk products,
- Meat and beans—emphasize low-fat and lean meats, nuts, seeds, and legumes, and
- Oils[2]—use mostly monounsaturated and polyunsaturated fats, such as those found in fish, nuts, and vegetable oils and de-emphasize solid fats, such as butter, margarine, shortening, and lard.

[1] Legumes (i.e., dry beans, peas, and lentils) count as a daily allowance in either the meat or the vegetable group. In this report, we included legumes in the vegetable group. ERS does not have data on seeds, such as pumpkin, sunflower, and squash seeds.

[2] ERS compiles data for the major manufactured fat and oil products, that is, margarine, edible tallow, lard, shortening, and salad and cooking oils. The food availability data aggregate them into an added fats and oils group and do not provide estimates of dietary fat from food sources, such as meat and dairy.

Table 1

Daily amount of food from each group as recommended by the USDA Food Pyramid Guide in the 2005 *Dietary Guidelines for Americans*

Food group	Calorie level[1]											
	1,000	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
	Number											
Fruits[2] (cups)	1	1	1.5	1.5	1.5	2	2	2	2	2.5	2.5	2.5
Vegetables[3] (cups)	1	1.5	1.5	2	2.5	2.5	3	3	3.5	3.5	4	4
Grains[4]	3	4	5	5	6	6	7	8	9	10	10	10
[Whole-grain portion (oz-eq)]	1.5	2	2.5	3	3	3	3.5	4	4.5	5	5	5
Meat and beans[5] (oz-eq)	2	3	4	5	5	5.5	6	6.5	6.5	7	7	7
Milk[6] (cups)	2	2	2	3	3	3	3	3	3	3	3	3
Oils[7] (tsp)	3	4	4	5	5	6	6	7	8	8	10	11
Discretionary calorie allowance[8]	165	171	171	132	195	267	290	362	410	426	512	648

Note: oz-eq = ounce-equivalent.

[1]Calorie levels are set across a wide range to accommodate the needs of different individuals. This table can be used to help assign individuals to the food intake pattern at a particular calorie level. A 2,000-calorie-per-day level is used in this report to be consistent with the nutrition facts labels found on packaged foods.

[2]The fruit group includes all fresh, frozen, canned, and dried fruits and fruit juices. In general, 1 cup of fruit or 100 percent fruit juice, or 1/2 cup of dried fruit can be considered as 1 cup from the fruit group.

[3]The vegetable group includes all fresh, frozen, canned, and dried vegetables and vegetable juices. In general, 1 cup of raw or cooked vegetables or vegetable juice, or 2 cups of raw leafy greens can be considered as 1 cup from the vegetable group. According to the MyPyramid Plan, 1 cup of whole, mashed, or cooked dry legumes or 1 cup of 1/2 inch cubes of tofu count as 1 cup from the vegetable group.

[4]The grains group includes all foods made from wheat, rice, oats, cornmeal, and barley—such as bread, pasta, oatmeal, breakfast cereals, tortillas, and grits. In general, 1 slice of bread, 1 cup of ready-to-eat cereal flakes, or 1/2 cup of cooked rice, pasta, or cooked cereal can be considered as 1 oz-eq from the grains group. At least half of all grains consumed should be whole grains.

[5]The meat and beans group includes, in general, 1 ounce of lean meat, poultry, or fish, 1 egg, 1 tablespoon peanut butter, 1/4 cup cooked dry beans, or 1/2 ounce of nuts or seeds.

[6]The milk group includes all fluid milk products and foods made from milk that retain their calcium content, such as yogurt and cheese. Foods made from milk that have little to no calcium, such as cream cheese, cream, and butter, are not part of the group. Most milk group choices should be fat-free or low-fat. In general, 1 cup of milk or yogurt, 1½ ounces of natural cheese, or 2 ounces of processed cheese can be considered as 1 cup from the milk group.

[7]Oils include fats from many different plants and from fish that are liquid at room temperature, such as canola, corn, olive, soybean, and sunflower oil. Some foods are naturally high in oils, like nuts, olives, some fish, and avocados. Foods that are mainly oil include mayonnaise, certain salad dressings, and soft margarine.

[8]Discretionary calorie allowance is the remaining amount of calories in a food intake pattern after accounting for the calories needed for all food groups using forms of foods that are fat-free or low-fat and with no added sugars.

Source: Prepared by USDA, Economic Reseearch Service using data from *Dietary Guidelines for Americans*, 2005, Appendix A2 "USDA Food Guide."

This report updates the analysis of Putnam et al. (2002), which examined overall food consumption patterns between 1970 and 2000. Using the 2000 edition of *Nutrition and Your Health: Dietary Guidelines for Americans*, Putnam et al. estimated whether Americans were meeting the *Guidelines'* recommendations. In this report, we used the 2005 *Dietary Guidelines for Americans* to estimate the dietary status of Americans. The main goals of this study were to: (1) analyze the amount of food available for consumption since 1970 for each food group, and (2) estimate whether Americans are meeting the *Guidelines'* recommendations for each food group.

Food consumption patterns change in response to changes in relative food prices, increases in real (adjusted for inflation) disposable income, and food assistance for the poor. Moreover, time series data on actual consumption by Americans are lacking. Most consumer surveys of dietary intake cover 1 or a few years of consumption and most are not nationally representative of the U.S. population. We tracked the amount of food available for consumption over time and the dietary status of Americans using the ERS Food Availability (Per Capita) Data System, a unique, popular, and often-cited data system that provides proxies for actual consumption.[3] The data system contains three separate but related data series—the Food Availability data, the Loss-Adjusted Food Availability data, and the Nutrient Availability data—that each look at food consumption differently.

[3]See www.ers.usda.gov/Data/FoodConsumption/ for detailed documentation of the data system.

The first series, the core food availability data, is the only time series data on the amount of food available for consumption in the United States and is a continuous series extending back to 1909 for many commodities. The data are calculated for each food or commodity (e.g., beef, low-fat milk, and fresh broccoli) as the sum of annual production, beginning stocks, and imports minus exports, ending stocks, and nonfood uses. Per capita estimates are calculated by dividing the total annual food supply of a commodity by the U.S. population that year. Food availability data do not directly measure actual consumption but rather serve as useful indicators of food consumption trends over time. Used in this manner, the data provide an upper bound on the amount of food available for consumption.

The second series, the loss-adjusted food availability data, adjusts the food availability data for spoilage and other losses and converts the per capita data to MyPyramid equivalents or daily allowance for comparison with Federal dietary recommendations. The percentage of food lost due to spoilage and other losses at several different stages along the food production, marketing, and consumption chain are identified for each commodity or food. In addition, the estimates incorporate loss assumptions for nonedible food parts, such as rinds, seeds, cores, and stems, as estimated in USDA's *Nutrient Database for Standard Reference* (www.nal.usda.gov/fnic/foodcomp/search). Next, we converted the loss-adjusted data from pounds per capita per year into daily per capita food intake in MyPyramid equivalents or daily allowance (as identified in USDA's *MyPyramid Food Guidance System*, www.Mypyramid.gov). The estimated MyPyramid equivalents for individual commodities or foods are then aggregated to determine total daily amounts for each food group. We then compared these estimates with Federal dietary recommendations to provide

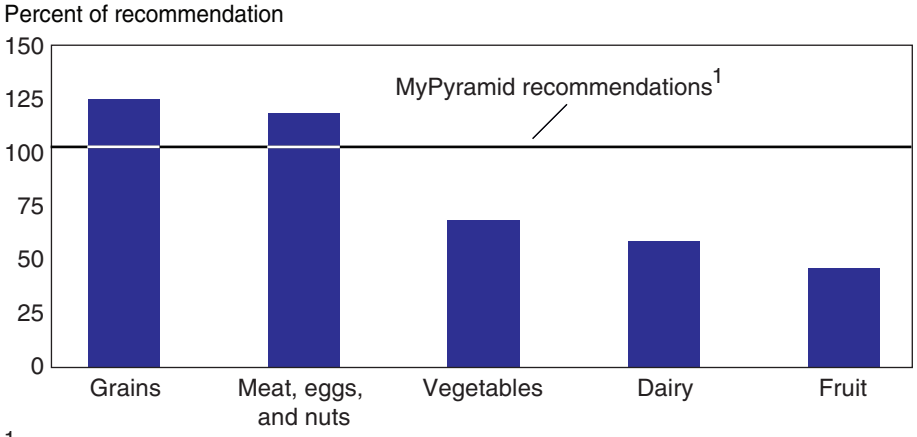
an estimate of whether Americans are meeting the dietary recommendations for the different food groups.

In particular, we compared the amount of food consumed by the average American with the amount recommended in USDA's Food Guide in Appendix A-2 of the 2005 *Dietary Guidelines for Americans*. These recommendations are broken into 12 calorie levels ranging from 1,000 to 3,200 calories per day. Our data are unavailable on the distribution of Americans among each of the 12 calorie levels in the *Dietary Guidelines* so instead, we used the 2,000-calorie-per-day reference level in our analysis to be consistent with the level used throughout the examples in the *Dietary Guidelines* and on the nutrition facts labels found on most packaged foods. Like the food availability data series, the loss-adjusted data do not directly measure actual consumption. The data are useful in approximating the amount of food Americans, on average, consume on a daily basis.

The third series, the nutrient availability data, calculated by USDA's Center for Nutrition Policy and Promotion (www.cnpp.usda.gov), uses the food availability data to calculate the amounts per capita per day of food energy (calories) and 27 nutrients and dietary components (i.e., protein, carbohydrates, fats, vitamins, and minerals) in the Nation's food supply. As with the food availability data, the resulting nutrient and calorie estimates do not account for losses due to the household and marketing system. In our analysis, we used the nutrient availability data to estimate the percentage of calories contributed by fat and saturated fat in the average American's diet.

The analyses had several key findings. We found that many Americans do not meet the Federal daily dietary recommendations.They consume foods and beverages high in fats and carbohydrates at greater than recommended rates and nutrient-dense foods and beverages, such as lower fat milk and milk products, fruits, and vegetables at levels below recommended rates (fig. 1).

Figure 1
Loss-adjusted per capita food availabiity out of balance with dietary recommendations



[1]2005 data based on a 2,000-calorie diet.
Source: USDA, ERS Food Availability (Per Capita) Data System.

Consumers Are Eating More Refined Grains but Not Enough Whole Grains

The total amount of food grains available for consumption in the United States increased 41 percent over the past three decades according to ERS's food availability data. Grain availability grew from 137 pounds per person (unadjusted for waste and spoilage) in 1970 to 192 pounds in 2005 (table 2). Of this 56-pound increase, 36 percent was from corn products (snacks, for example), 34 percent was from white and whole-wheat flour, 24 percent was from rice, and 8 percent was from durum flour (pasta, for example). Estimated availability of rye flour, barley products, and oat products remained relatively constant. Although the amount of rice and corn products available for consumption almost tripled between 1970 and 2005, the relative importance of the different food grains remained unchanged, with wheat maintaining its dominant share of total grains available for consumption (fig. 2).

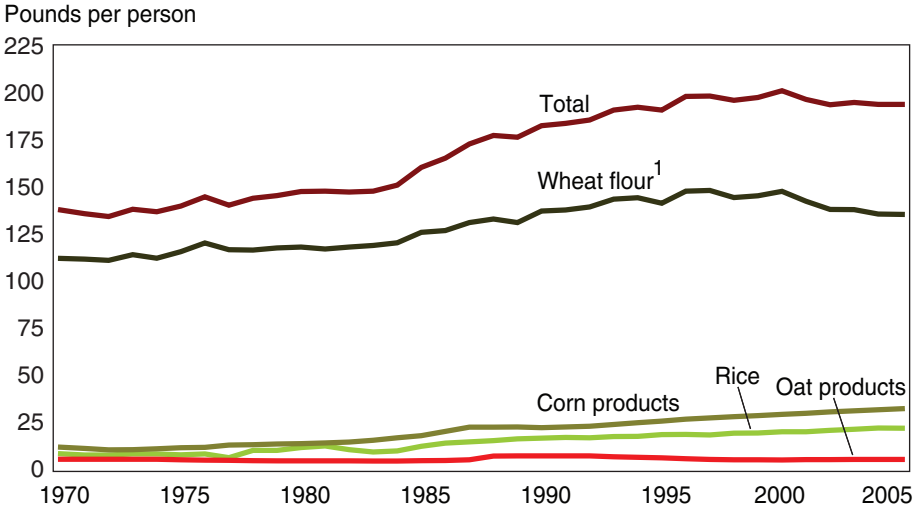
The 2005 *Dietary Guidelines* provided, for the first time, specific dietary recommendations for whole grains. The *Guidelines* recommend that half of the daily grain allowance be from whole grains. For example, the *Guidelines* recommend that Americans on a 2,000-calorie-per-day diet consume 6 ounce-equivalents (oz-eq) of grains per day, at least 3 oz-eq of which should be whole grains. The goal of the recommendation is to encourage Americans to eat more whole grains for their nutritional benefits. Whole grains are good sources of fiber and other nutrients, such as calcium, magnesium, and potassium. Daily intake of at least 3 oz-eq or more of whole grains per day may help an individual with weight control and can reduce the risk of several chronic diseases.

According to ERS's loss-adjusted food availability data, Americans, on average, consumed 7.5 oz-eq of grains per day, mostly refined grains. The database has some significant data gaps for whole grains, such as popcorn, wheat products, and other products, and, therefore, the data do not provide a comprehensive estimate of the per capita consumption of whole grains. When considering both the whole grains covered in the data and those omitted, we estimate that Americans consume 0.9 oz-eq of whole grains—a far cry from the recommended 3 oz-eq of whole-grains for a 2,000-calorie-per-day diet.[4] Also, if we add the estimated 0.6 oz-eq from the missing whole-grain foods to the 7.5 oz-eq included in the database, we estimate that the new total for grains would be 8.1 oz-eq in 2005. In short, we found that Americans are eating more than double the recommended amount of refined grains per day while eating a third of the recommended amount of whole grains.

[4]Putnam et al. (2002) estimated that Americans consumed 0.6 oz-eq of whole-grains per person per day in 2000 that were not included in the loss-adjusted food availability data. Buzby et al. (2006) estimated that 0.261 oz-eq of whole-wheat flour and whole-wheat flour products are covered in the food availability database by using the estimated per capita consumption of 5.22 oz-eq of wheat flour per person and the 5-percent industry estimate of whole-wheat flour as a share of domestically milled wheat (Buzby et al., 2006). If the missing whole-grain foods of 0.6 oz-eq were added to the 0.261 oz-eq already covered in the data, we estimate that the new total for whole grains would be about 0.9 oz-eq in 2005.

Figure 2

Per capita total grain availability grew by 55 pounds between 1970 and 2005



[1]2005 data based on a 2,000-calorie diet.
Source: USDA, ERS Food Availability (Per Capita) Data System.

Table 2

Per capita availability of grains grew 41 percent between 1970 and 2005

Item	Per capita availability[1] 1970	Per capita availability[1] 2005	Change, 1970 to 2005	2005 loss-adjusted food availability[2]
		Pounds	*Percent*	*Oz-eq/day*
Total wheat flour	110.9	134.1	21	5.1
White and whole wheat flour	104.0	122.3	18	4.8
Durum wheat flour[3]	6.9	11.8	71	.4
Rye flour	1.2	.5	-58	---
Rice (milled)	6.8	21.0	177	.6
Total corn products	11.1	31.4	183	1.6
Corn flour and meal	7.0	18.8	169	.9
Hominy and grits	2.2	8.1	268	.4
Corn starch	1.9	4.5	137	.3
Oat products	4.7	4.6	-3	.1
Barley products	1.0	.7	-34	---
Total flour and cereal products[4]	136.5	192.3	41	8.1

Notes: Totals may not add due to rounding. Oz-eq = ounce equivalent. --- = less than 0.05 oz-eq.
[1]Aggregate data, unadjusted for cooking losses, plate waste, and other losses, excluding quantities used in alcoholic beverages and fuel, popcorn, and other whole-grain foods.
[2]Adjusted for cooking losses, plate waste, and other losses. According to MyPyramid Plan, 1 slice of bread, 1 cup of ready-to-eat cereal flakes, or 1/2 cup of cooked rice, pasta, or cooked cereal can be considered as 1 oz-eq from the grains group. At least half of all grains consumed should be whole grains.
[3]Includes flour equivalent of imported pasta products.
[4]The estimate of 8.1 oz-eq is the 7.5 oz-eq from the loss-adjusted food availability data plus the missing whole-grain foods of 0.6 oz-eq from Putnam et al. (2002).
Source: USDA, ERS Food Availability (Per Capita) Data System.

Americans Are Consuming More Fruits and Vegetables

In general, Americans have been consuming more fruits and vegetables over the last three decades, according to food availability data. In 2005, per capita total fruit and vegetable availability (fresh and processed, fresh weight equivalent, unadjusted for waste and spoilage) reached 687 pounds, up 110 pounds, or 19 percent, since 1970. This 19-percent increase was not distributed equally among the 134 fruits and vegetables covered in the ERS data. Much of the rise within fruits was contributed by the noncitrus group, particularly apples, bananas, and grapes (table 3). Among the vegetable group, tomatoes, onions, and leafy lettuces contributed to the increase (table 4).

Table 3

Per capita availability of fruits increased 13 percent between 1970 and 2005

Item	Per capita availability[1] 1970	2005	Change, 1970 to 2005	2005 loss-adjusted food availability[2]
	Pounds, fresh-weight equivalent		*Percent*	*Cups/day*
Citrus, melons, and berries[3,4]	138.8	136.4	-2	0.36
Citrus	113.7	101.2	-11	.26
Fresh	28.8	21.6	-25	.06
Processed (juice)	84.9	79.6	-6	.20
Melons[3]	21.6	25.8	19	.05
Watermelon	13.5	13.8	2	.03
Cantaloup	7.2	10.1	40	.02
Berries[3]	3.5	8.9	156	.05
Fresh and frozen strawberries	2.9	7.7	163	.03
Other fruits[3,4]	101.9	136.0	36	.57
Fresh bananas	17.4	25.1	45	.08
Fresh apples	17.2	16.9	-1	.12
Fresh grapes	2.9	8.6	197	.04
Apple juice	6.4	22.5	254	.07
Grape juice	2.4	5.6	135	.02
Canned applesauce	5.7	4.3	-24	.07
Canned olives	1.0	1.4	48	.03
Canned peaches	6.8	3.3	-50	.01
Raisins	5.8	7.3	25	.02
Total fruits	240.7	272.4	13	.92

Note: Totals may not add due to rounding.
[1]Aggregate data, unadjusted for cooking losses, plate waste, and other losses.
[2]Adjusted for cooking losses, plate waste, and other losses. According to MyPyramid Plan, 1 cup of fruit or 100% fruit juice, or 1/2 cup of dried fruit can be considered as 1 cup from the fruit group.
[3]Includes food item(s) not shown separately.
[4]Includes fresh and processed fruits.
Source: USDA, ERS Food Availability (Per Capita) Data System.

Despite our estimate that Americans are consuming more fruits and vegetables than they did in 1970, they are still not meeting the *Dietary Guidelines'* recommendations. According to the loss-adjusted food availability data, Americans on a 2,000-calorie-per-day diet consumed 0.9 cup of fresh and processed fruits per person per day in 2005, less than half the *Guidelines'* recommendation of 2 cups. We also estimated that each American ate 1.7 cups of fresh and processed vegetables per day in 2005, about 45 percent below the recommended amount of 2.5 cups in the *Dietary Guidelines*.

Table 4

Per capita availability of vegetables increased 23 percent between 1970 and 2005

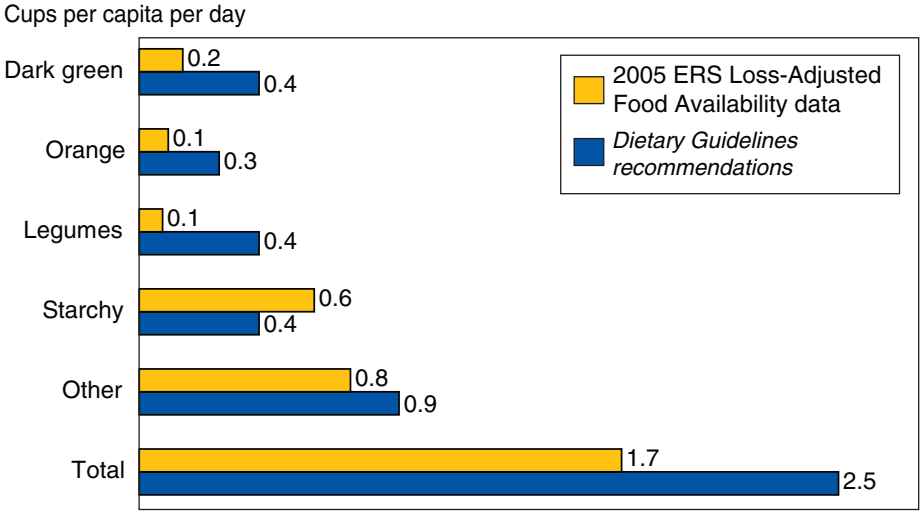
Item	Per capita availability[1]		Change, 1970 to 2005	2005 loss-adjusted food availability[2]
	1970	2005		
	Pounds, fresh-weight equivalent		*Percent*	*Cups/day*
Dark-green vegetables[3,4]	3.8	20.2	425	0.16
Leafy lettuces[5]	.6	10.9	1,856	.08
Broccoli	1.5	8.3	446	.04
Deep-yellow vegetables[3,4]	15.0	21.4	43	.10
Carrots	9.5	11.9	24	.06
Sweet potatoes	5.4	4.5	-17	.02
Other starchy vegetables[3,4]	155.5	155.5	---	.63
Potatoes	121.7	125.6	3	.55
Corn	27.8	26.9	-3	.06
Other vegetables[3,4]	154.9	210.5	36	.80
Head lettuce	22.4	21.1	-6	.12
Canned tomatoes	62.1	73.6	18	.13
Garlic	.4	2.4	450	.01
Fresh tomatoes	12.1	20.2	66	.07
Fresh onions	10.1	21.0	107	.07
Cucumbers	8.5	10.2	20	.03
Bell peppers	2.2	7.1	227	.03
Cabbage	11.0	9.3	-15	.06
Celery	7.3	5.9	-19	.04
Total vegetables	336.8	414.6	23	1.72

Notes: Totals may not add due to rounding. --- = less than 0.5 percent.
[1]Aggregate data, unadjusted for cooking losses, plate waste, and other losses.
[2]Adjusted for cooking losses, plate waste, and other losses. According to MyPyramid Plan, 1 cup of raw or cooked vegetables or vegetable juice, or 2 cups of raw leafy greens can be considered as 1 cup from the vegetable group.
[3]Includes food item(s) not shown separately.
[4]Includes fresh and processed vegetables.
[5]Includes escarole and romaine.
Source: USDA, ERS Food Availability (Per Capita) Data System.

The *Guidelines* also recommend choosing a variety of types of fruits and vegetables because some fruits and vegetables are higher in certain vitamins and minerals than others. In particular, the *Guidelines* encourage Americans to select from all five vegetable subgroups several times a week because each subgroup provides a somewhat different array of nutrients. For example, the recommended weekly intake of vegetables for persons on a 2,000-calorie-per-day diet consists of dark-green vegetables (3 cups), orange vegetables (2 cups), legumes (i.e., dry beans, peas, and lentils) (3 cups), starchy vegetables (3 cups), and other vegetables (6.5 cups). Of the five vegetable subgroups, starchy vegetables, particularly potatoes, dominated vegetable consumption, accounting for approximately a third of the total and slightly above the recommended level (fig. 3). Legumes had the lowest estimated consumption level. Overall, Americans consumed a limited variety of vegetables.

Like vegetable consumption, the bulk of fruit consumption came from a limited variety of fresh and processed fruits. For example, 5 out of the 62 items covered in the loss-adjusted food availability data accounted for more than half (54 percent) of daily fruit intake in 2005—orange juice (20 percent), fresh apples (13 percent), bananas (9 percent), apple juice (8 percent), and fresh grapes (5 percent).

Figure 3
2005 loss-adjusted food availability data compared with 2005 *Dietary Guidelines'* recommendations for a 2,000-calorie diet



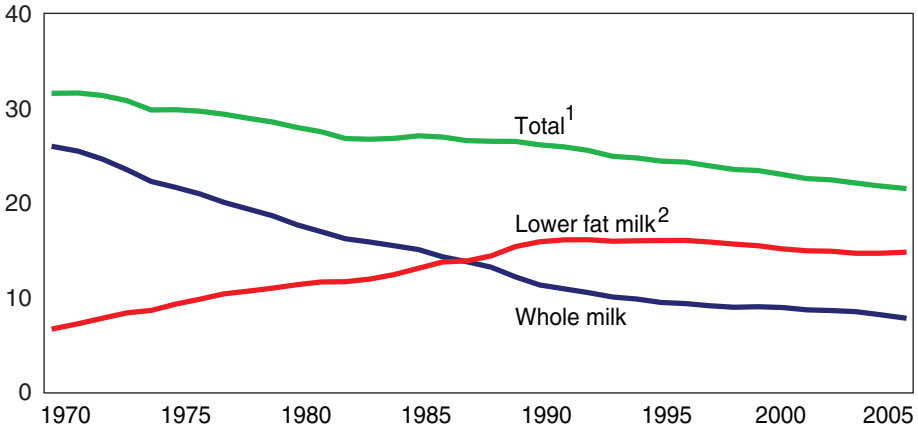
Note: Other vegetables include artichokes, asparagus, snap beans, broccoli, tomatoes, etc.
Source: USDA, ERS Food Availability (Per Capita) Data System.

Americans Are Consuming Less Milk but More Cheese

According to the food availability data, the availability of all milk and milk products increased 6 percent between 1970 and 2005, from 564 pounds per person (milk equivalent) to about 601 pounds (table 5). Cheese availability contributed significantly to the increase. Part of this increase can be attributed to the growth of food consumed away from home and the introduction of new, convenient cheese products, such as resealable bags of shredded cheese (Buzby, 2005). Between 1970 and 2005, the availability of cheese (other than cottage cheese) nearly tripled, from 11 pounds per person to 31 pounds per person. Yogurt availability grew about tenfold. Meanwhile, availability of beverage milk, frozen dairy products, dry milk, and evaporated/condensed milk declined. Beverage milk availability decreased 33 percent between 1970 and 2005. Within the beverage milk category, whole-milk availability dropped 73 percent while lower fat milk rose 143 percent (fig. 4). Similarly, availability of frozen dairy products decreased 6 percent, dry milk 45 percent, and evaporated/condensed milk 52 percent.

The 2005 *Dietary Guidelines* recommend that Americans on a 2,000-calorie-per-day diet consume 3 cups of milk and milk products per day. According to our loss-adjusted food availability data, Americans consumed 1.8 cups of milk and milk products per person per day in 2005.[5]

Figure 4
Per capita availability of whole milk declined 73 percent, while that of lower fat milk grew 143 percent between 1970 and 2005



[1] Includes flavored milk and buttermilk.
[2] Includes buttermilk (1.5 percent fat), plain and flavored reduced-fat milk (2 percent fat), low-fat milk (1 percent fat), and fat-free milk.
Source: USDA, ERS Food Availability (Per Capita) Data System.

[5]In our analysis, only the milk portions of half and half and eggnog are included in the daily dairy amount. Cream portions of these products, cream cheese, and butter are counted as added fats.

The *Guidelines* also recommend fat-free or low-fat milk or equivalent milk products instead of dairy products high in saturated fat. Food availability data measure reduced-fat and non-fat versions for some dairy products, such as fluid milk, cottage cheese, dry milk, and condensed/evaporated milks, which contributed about a third of the total dairy allowance per person per day. The data do not, however, distinguish the fat content of other dairy products, particularly how much of the increase in cheese consumption is due to the increased use of reduced-fat, low-fat, and non-fat cheese. According to the International Dairy Foods Association, reduced-fat, low-fat, and non-fat cheeses' share of supermarket sales of cheese increased from 19 percent in 1999 to 25 percent in 2005, suggesting that 75 percent of cheese consumption still comes from regular or full-fat cheese products. While Americans are gradually increasing their intake of lower fat cheeses, they need to cut back considerably on higher or full-fat versions of dairy products in order to meet the dietary recommendations.

Table 5

Per capita availability of milk and milk products increased 6 percent between 1970 and 2005

Item	Per capita availability[1] 1970	2005	Change, 1970 to 2005	2005 loss-adjusted food availability[2]
	Gallons		*Percent*	*Cups/day*
Fluid milk products	31.4	22.3	-30	0.69
Beverage milk	31.3	21.0	-33	.65
Whole	25.5	6.9	-73	.22
Plain	24.8	6.6	-73	.21
Flavored	.7	.3	-55	.01
Lower fat and skim milk	5.8	14.0	143	.43
Plain (2% fat)	3.2	6.9	111	.21
Plain (1% fat)	.2	2.5	1,081	.08
Flavored (1% and 2% fat)	.3	1.4	300	.04
Skim	1.3	3.1	132	.10
Buttermilk	.6	.2	-69	.01
Yogurt	.1	1.0	941	.03
	Pounds		*Percent*	*Cups/day*
Total cheese (excl. cream cheese)[3]	16.5	34.0	106	.69
Cheese other than cottage[3,4]	11.4	31.4	176	.68
Cheddar	5.8	10.1	75	.24
Mozzarella	1.2	10.2	754	.24
Cottage cheese	5.2	2.6	-50	.01
Frozen dairy products[5]	28.5	24.1	-15	.10
Ice cream	17.8	15.4	-13	.06
Low-fat ice cream	7.7	5.9	-23	.02
Frozen yogurt and other misc.	3.0	2.8	-6	.01
Condensed/evaporated milks	12.0	5.8	-52	.04
Dry milk	5.8	3.2	-45	.13
Total milk and milk products	563.9	600.5	6	1.77

Note: Totals may not add due to rounding.

[1]Aggregate data, unadjusted for cooking losses, plate waste, and other losses.

[2]Adjusted for cooking losses, plate waste, and other losses. According to MyPyramid Plan, 1 cup of milk or yogurt, 1½ ounces of hard cheese, 2 ounces of processed cheese, 2 cups of cottage cheese, or 1½ cups of ice cream can be considered as 1 cup from the milk group. Only the milk portion of half and half and eggnog are included in the daily dairy allowance; the cream portion is included in added fats. [3]Cream cheese is counted in added fats. [4]Excludes full-skim American, cottage, pot, and baker's cheese. [5]Includes items not shown separately, such as mellorine, which is a nondairy alternative to ice cream (1970-1990).

Source: USDA, ERS Food Availability (Per Capita) Data System.

Added Fats and Oils Alone Contributed 32 Percent of Total Calories

Added fats and oils are found in processed food products (e.g., french fries, baked goods, and snacks) and are used for cooking. These fats and oils are consumed in addition to fats that occur naturally in foods, such as in red meat and dairy products. According to the food availability data, per capita availability of added fats and oils (unadjusted for waste and spoilage) reached about 86 pounds per person in 2005, up 33 pounds from 1970. Of the 2005 total, nearly 86 percent consisted of vegetable oils and related products, such as margarine, shortening, and cooking and salad oils. Animal fats, such as butter, lard, and edible tallow, made up the remaining 14 percent (table 6).

Table 6
Per capita availability of added fats and oils up 63 percent between 1970 and 2005

Item	Per capita availability[1] 1970	2005	Change, 1970 to 2005	2005 loss-adjusted food availability[2]
	Pounds, fat content basis		*Percent*	*Grams*
Animal fat	14.1	11.8	-17	9.2
Butter	4.3	3.7	-15	3.6
Lard (direct use)[3]	4.6	1.5	-66	1.0
Edible beef tallow (direct use)[3]	NA	3.8	NA	2.3
Shortening[4]	4.7	2.7	-42	2.3
Margarine[4]	.5	---	-91	---
Vegetable fats and oils	38.5	73.7	91	59.6
Salad and cooking oils	15.4	42.7	177	33.5
Shortening	12.6	26.4	109	22.0
Margarine	8.2	3.2	-61	2.3
Other edible fats and oils[5,6]	2.3	1.5	-36	1.7
Dairy fat[7]	--	--	--	2.7
Total added fats and oils[8]	52.6	85.5	63	71.6

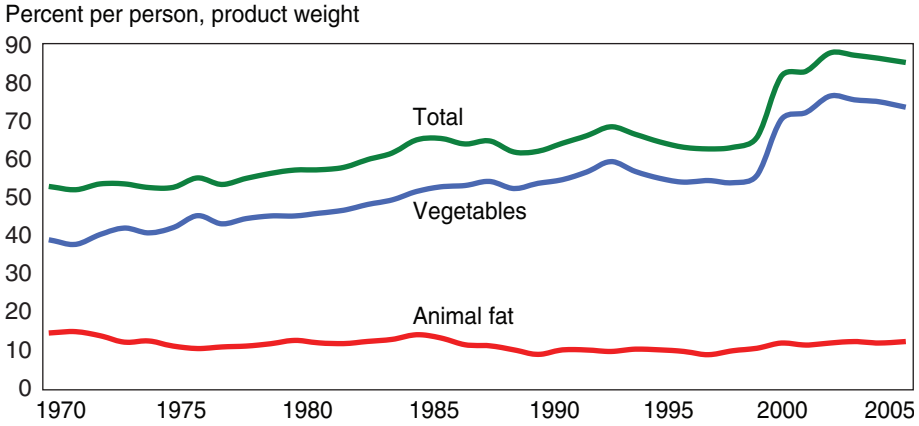
Notes: NA = not applicable or not available. --- = less than 0.05. Totals may not add due to rounding.
[1]Aggregate data, unadjusted for cooking losses, plate waste, and other losses. Total fats and oils reported on a fat content basis.
[2]Adjusted for cooking losses, plate waste, and other losses. Fat content of butter and margarine calculated at 80 percent. One gram of fat equals 9 calories.
[3]Excludes use in margarine and shortening.
[4]Animal fat portion for shortening and margarine are 9.4 and 1.3 percent, respectively.
[5]In 2000, the number of firms reporting vegetable oil production increased.
[6]Specialty fats used mainly in confections and nondairy creamers.
[7]Includes only the cream portion of half and half, heavy and light cream, sour cream, and cream cheese.
[8]Excludes most naturally occurring fat, such as meats, beverage milks, nuts, and avocados.
Source: USDA, ERS Food Availability (Per Capita) Data System.

One important caveat about the added fats and oils data is that the number of firms reporting vegetable oil production to the U.S. Census Bureau increased noticeably in 2000. As a result, the availability of salad and cooking oils and shortening rose from 50 pounds per person in 1999 to 65 pounds person in 2000, a 31-percent increase. We believe it unlikely that this unusually large increase in the number of firms occurred in 1 year; it is more likely that the number increased incrementally over time. The jump could suggest that the availability estimates in a few years before 2000 were somewhat underestimated. However, we do not have additional information from the U.S. Census Bureau to clarify that supposition. Therefore, the data must be interpreted with care when discussing particular estimates for salad and cooking oils and shortening around 2000 or when discussing more aggregated numbers that use these estimates, such as estimates for total vegetable fats and oils or total added fats and oils seen in figure 5.

In general, the added fats and oils data show modest increases from 1970 to 1999, the big increase in 2000, moderate increases until 2002, and then a decline between 2002 and 2005. Despite the data limitations around 2000, the data make the important point that the availability of added fats and oil has generally trended upward since 1970.

According to the *Guidelines*, fats are part of a healthful diet, although excessive intake, particularly of saturated fats, is associated with high cholesterol and coronary heart disease. The *Guidelines* recommend that fats and oils, both added and naturally occurring, contribute 20 to 35 percent of daily energy intake depending on calorie level.[6] People on a 2,000-calorie-per-day diet, therefore, should consume 400 to 700 calories from fats per day, or 44 to 78 grams of fat. Using the loss-adjusted food availability data, we estimated that Americans consumed 71.6 grams of added fats and oils per person per day in 2005.[7] As previously mentioned, this estimate does not include fats occurring naturally in foods (e.g., in meat and dairy products), yet accounts for about 32 percent of total calories for a 2,000-calorie-per-day diet.

Figure 5
Added fats and oils consumption increased 63 percent beween 1970 and 2005



Note: In 2000, there was a dramatic increase in the number of firms reporting vegetable oil production to the U.S. Census Bureau.
Source: USDA, ERS Food Availability (Per Capita) Data System.

[6]The *Guidelines* recommend that fats and oils, both naturally occurring and added, contribute 20 to 35 percent of total calories for adults; 25 to 35 percent for children 4 to 18 years old; and 30 to 35 percent for children 2 to 3 years old.

[7]Cream portions of half and half and eggnog, as well as cream cheese and butter, are counted as added fats.

In addition to recommendations for total fat intake, the *Guidelines* suggest limiting saturated fats, found in animal fats, to less than 10 percent of total dietary fat. The *Guidelines* recommend that most fats should be mono-unsaturated and polyunsaturated fats, such as those found in fish, nuts, and vegetables. According to the nutrient availability data (unadjusted for waste and spoilage), Americans consumed both added and dietary fats in excess of the recommended level. In 2004, per capita total fat (both added and naturally occurring) availability reached 179 grams per day. Of this amount, saturated fats accounted for 31 percent, and unsaturated fats accounted for 69 percent. Therefore, not only do Americans need to decrease their total intake of fat, they also need to substantially lower their intake of saturated fat in order to adhere to the 2005 *Guidelines*.

Beef Still Dominates, but Chicken Is Gaining Ground

The total amount of meat, eggs, and nuts available for consumption (unadjusted for waste and spoilage) grew from 225 pounds per person in 1970 to about 242 pounds per person in 2005 according to the food availability data (table 7). This 8-percent increase, however, was not distributed equally across the meat group. Poultry availability, for example, provided a significant contribution to the increase. Between 1970 and 2005, per capita poultry availability more than doubled, from 34 pounds per person to 74 pounds per person. Part of the rise in poultry, particularly chicken, results from the chicken industry's catering to consumers' and foodservice operators' demand for value-added, brand-name, and convenience products (Buzby et al., 2006). During the same period, availability of fish and shellfish and tree nuts and peanuts grew 5 and 3 pounds per person, respectively.

In contrast, red meat availability (beef, veal, pork, and lamb) faced a major decline. Since its peak of 133 pounds per person in 1976, red meat availability fell to 110 pounds per person in 2005. This decline in red meat availability was largely due to beef, which dropped 17 pounds, or 22 percent between 1970 and 2005. Availability of eggs likewise decreased during the same period. Over the past three decades, red meat's share of total meat dropped while the share of poultry continued to rise. However, red meat, particularly beef, remains the main source of protein in Americans' diet (fig. 6).

Ounce for ounce, poultry and fish products have less fat, saturated fat, and cholesterol than beef, according to USDA's Nutrient Database for Standard Reference. Also, according to the nutrient availability data (unadjusted for spoilage and other losses), the proportion of fat in the U.S. food supply contributed by red meat, poultry, and fish declined from 32 percent in 1970 to 20 percent in 2004. Much of this decline can be attributed to red meat's share of fat in the food supply, which dropped from 27 percent to 13 percent during the same period. Similarly, red meat's proportion of saturated fat declined from 35 to 23 percent.

The *Dietary Guidelines* as depicted in the MyPyramid Plan recommends daily consumption of 5.5 oz-eq from the meat and beans group (meat, poultry, fish, legumes, eggs, nuts, and seeds)[8] per person as part of a 2,000-calorie-per-day diet. According to the loss-adjusted food availability data, Americans consumed 6.5 oz-eq of meat, poultry, fish, eggs, and nuts per person per day in 2005 (i.e., not including legumes). This estimate is 16 percent above the recommended amount, suggesting that Americans need to decrease their meat intake to meet the recommendations in the *Dietary Guidelines*. In addition, many Americans need to change the types of meats consumed in order to choose diets with less fat, saturated fat, and cholesterol (HHS, 2005).

[8]According to MyPyramid Plan, meat, poultry, and fish are counted in total ounces. For the other foods in this group, the following portions are counted as the equivalent of 1 ounce of cooked lean meat: 1 egg, ¼ cup of cooked dry beans, ¼ cup of tofu, a 2-ounce soy burger, and 1 tablespoon of peanut butter. Legumes (i.e., dry beans, peas, and lentils) count either as a daily allowance in the meat or the vegetable group. In this report, we included legumes in the vegetable group. ERS does not have data on seeds.

Table 7

Per capita availability of meat, eggs, and nuts[1] increased 8 percent between 1970 and 2005

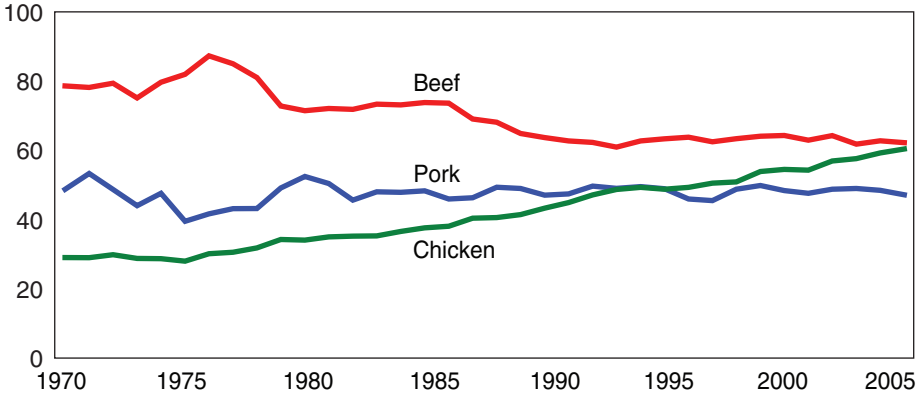
Item	Per capita availability[2] 1970	Per capita availability[2] 2005	Change, 1970 to 2005	2005 loss-adjusted food availability[3]
	Pounds, edible weight		*Percent*	*Oz-eq/day*
Total meat, poultry, and fish[4]	177.5	199.7	13	5.2
Red meat	131.9	110.0	-17	2.9
Beef	79.6	62.4	-22	1.7
Pork	48.1	46.5	-3	1.2
Veal, lamb, and mutton	2.0	.4	-81	---
Poultry	33.8	73.6	118	1.8
Chicken	27.4	60.4	120	1.5
Turkey	6.4	13.1	106	.4
Fish and shellfish	11.7	16.1	37	.5
Eggs	39.5	32.7	-17	.5
Nuts (including peanut butter)	7.80	9.87	27	.7
Total meat, eggs, and nuts	224.8	242.3	8	6.5

Notes: Totals may not add due to rounding. Oz-eq = ounce equivalent. --- = less than 0.05.
[1]Legumes are counted in the vegetable group.
[2]Aggregate data, unadjusted for cooking losses, plate waste, and other losses.
[3]Adjusted for cooking losses, plate waste, and other losses. According to MyPyramid, 1 ounce of meat, poultry or fish, ¼ cup cooked dry beans, 1 egg, 1 tablespoon of peanut butter, or ½ ounce of nuts or seeds can be considered as 1 oz-eq.
[4]Boneless, trimmed-weight equivalent for the meat group. Excludes all legumes consumed. Legumes are included under the vegetable group in this analysis. Total meat group is in pounds.
Source: USDA, ERS Food Availability (Per Capita) Data System.

Figure 6

Chicken consumption increased 116 percent between 1970 and 2005

Pounds per capita (bonless trimmed equivalent)



Source: USDA, ERS Food Availability (Per Capita) Data System.

Added Sugars and Sweeteners Up 19 Percent

Added sugars and sweeteners (or caloric sweeteners) include refined cane and beet sugars, corn sweeteners, and edible syrups added to processed foods and beverages but do not include dietary sugars found naturally in foods, such as in fruits. According to the food availability data, per capita availability of added sugars and sweeteners totaled 142 pounds in 2005, 7 percent less than the 1999 record high of 151 pounds per person, but 19 percent more than in 1970 (table 8).

Perhaps the most interesting change in added sugars and sweeteners between 1970 and 2005 is that annual per capita corn sweetener availability increased 387 percent while per capita availability of refined cane and beet sugars (i.e., sucrose) declined 38 percent (fig. 7). This increase in corn sweeteners was driven mostly by increased use of high-fructose corn syrup (HFCS). Between 1970 and 2005, HFCS's share of all corn sweeteners grew from 3 to 76 percent. Prior to the early 1980s, most food industries used sucrose instead of corn sweeteners. By the mid-1980s, industries had switched to corn sweeteners, particularly HFCS, a low-cost substitute for sugar in beverages. Today, the U.S. soft drink industry is the largest user of HFCS, followed by the processed food and baking industries.

The Dietary Guidelines do not provide quantitative recommendations for added sugars but rather advise Americans to choose and prepare foods and beverages with little added sugars or caloric sweeteners, such as amounts suggested by the USDA's Food Guide in Appendix A-3 of the *Dietary Guidelines*. For example, Americans on a 2,000-calorie-per-day diet who divide their discretionary calorie allowance equally between solid fats and added sugars should limit consumption of added sugars to 8 teaspoons per day to comply with the *Guidelines*. According to the loss-adjusted food availability data, Americans consumed 30 teaspoons of added sugars and sweeteners per person per day in 2005. This amount suggests that Americans, on average, are consuming more than triple the amount recommended. Thirty teaspoons of added sugars and sweeteners are equivalent to 477 calories per day, or about 24 percent of the total daily caloric intake for a person on a 2,000-calorie-per-day diet.

Table 8

Per capita availability of added sugars and sweeteners grew 19 percent between 1970 and 2005

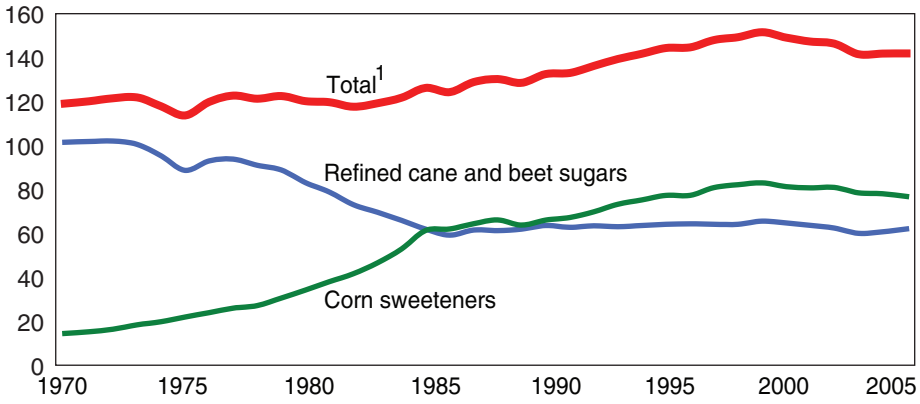
Item	Per capita availability[1] 1970	Per capita availability[1] 2005	Change, 1970 to 2005	2005 loss-adjusted food availability[2]
	Pounds, dry-weight equivalent		*Percent*	*Teaspoons*
Refined cane and beet sugars	101.8	62.8	-38	13.2
Corn sweeteners	15.9	77.4	387	16.3
High-fructose corn syrup	.5	59.0	10,673	12.4
Glucose	10.7	15.2	43	3.2
Dextrose	4.6	3.2	-31	.7
Edible syrups	.5	.3	-32	.1
Honey	1.0	1.0	3	.2
Total sugars and sweeteners	119.1	141.6	19	29.8

Note: Totals may not add due to rounding.
[1]Aggregate data, unadjusted for cooking losses, plate waste, and other losses.
[2]Adjusted for cooking losses, plate waste, and other losses. One teaspoon of sugar equals 16 calories.
Source: USDA, ERS Food Availability (Per Capita) Data System.

Figure 7

Corn sweetener consumption increased 387 percent between 1970 and 2005

Pounds per person, dry-weight equivalent



[1]Includes honey, maple, and sugarcane syrup, edible molasses, and edible refiners' syrup.
Source: USDA, ERS Food Availability (Per Capita) Data System.

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