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Nutrient Content of the U.S. Food Supply, 1909-99

A Summary Report

Abstract

This report presents historical data on the nutrient content of the U.S. food supply. Included in this summary report are estimates on the average pounds of food per capita and the average amount of nutrients per capita by decade beginning with 1909-19. Information is provided for 28 foods/food groups and food energy and 27 nutrients. Also included in this report are estimates of percentage contributions of nutrients by major food group for 1909-19 and 1990-99. The data presented in this report are useful to agricultural policymakers, economists, nutritionists, and public health educators. Food availability and nutrient estimates of the food supply are used to monitor the potential of the food supply to meet the nutritional needs of the U.S. population and to examine trends and evaluate changes in the American diet over time.

From 1909-19 to 1990-99, the availability of food energy and many nutrients increased in the food supply. The availability of more food energy reflects higher levels of most macronutrients, principally fat in the 1990's, than in the early years of the series. Higher levels of thiamin, riboflavin, niacin, iron, and folate in the 1990's reflect Federal enrichment standards, the folate fortification policy of 1998, and the use of enriched grain products. Higher levels of vitamin A reflect fortification of ready-to-eat cereals, margarine, and dairy products as well as the development in the 1960's of new varieties of deep-yellow vegetables. The higher levels of vitamin E in the later years of the series were due to a greater use of vegetable fats and oils. Higher calcium and phosphorous levels in 1990-99 reflect the increased consumption of lowfat milk, cheese, yogurts, and other dairy products. Higher sodium levels in 1990-99 indicate the increased availability of processed foods, such as cheese and canned vegetables in the later years of the series.

From 1909-19 to 1990-99, levels of magnesium and copper remained the same, and those of saturated fat, vitamin B_{12}, potassium, and selenium were similar to levels in 1909-19. Levels for cholesterol and dietary fiber were lower in 1990-99 than in 1909-19. The lower cholesterol levels in 1990-99 reflect the decreased use of eggs and the shift from whole milk to lowfat dairy products since 1909-19, while the lower levels of dietary fiber are attributable to the decreased consumption of grains since 1909-19.

This publication is an update of Home Economics Research Report No. 54, *Nutrient Content of the U.S. Food Supply, 1909-97*, issued in 2001. This report includes revised estimates for the years 1909 through 1997 as well as new estimates for 1998 and 1999. This publication is different from previous reports in that it presents data on foods and nutrients by decade beginning with 1909-1919 and ending with 1990-1999. This summary report supersedes all previous publications on the nutrient content of the U.S. food supply.

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A Summary Report

S. Gerrior
L. Bente

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Contents

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INTRODUCTION

The U.S. food supply, a historical series measuring the amount of nutrients per capita per day available for consumption, is the only continuous source of food and nutrient availability in the United States with extended data back to 1909. Food supply nutrients were calculated for the first time during World War II to assess the nutritive value of the food supply for civilian use in the United States and to provide a basis for international comparisons with the food supplies of our allies.

The nutrient content of the food supply provides per capita estimates for food energy and the energy-yielding nutrients—protein, carbohydrate, and fat—as well as for total fat; saturated, monounsaturated, and polyunsaturated fatty acids; cholesterol; dietary fiber; 10 vitamins; and 9 minerals. The nutrient content of the food supply is updated annually, using per capita consumption data from the United States Department of Agriculture's (USDA) Economic Research Service (ERS) and food composition data from USDA's Agricultural Research Service (ARS).

Per capita food supply estimates provide unique and essential information on the amount of food and nutrients available for consumption. They are useful to assess trends in food and nutrient consumption over time, for monitoring the potential of the food supply to meet the nutritional needs of Americans, and for examining relationships between food availability and diet-health risk. Food supply nutrients are closely linked to food and nutrition policy, with prominence in areas related to nutrition monitoring, Federal dietary guidance, nutritional requirements, nutrition education, fortification policy, and food marketing strategies.

This summary report provides data on the average pounds of food per capita per year and the average amount of nutrient per capita per day by decade beginning with 1909-19. Information is provided for 28 foods/food groups and food energy and 27 nutrients and dietary components. Food consumption and nutrient trends are compared by major food group and by nutrient for decades from 1909-19 through 1990-99. Significant food consumption and nutrient events over the series are also presented.

FOOD SUPPLY DATA

Per Capita Consumption Estimates

ERS annually calculates the amount of food available for consumption on a per capita basis in the United States (Putnam & Allshouse, 1999). Estimates for about 400 commodities available for human use are calculated from supply and utilization balance sheets. The availability of food for human use represents disappearance of food into the marketing system, and it is often referred to as food disappearance. Food disappearance measures food supplies for consumption through all outlets—home and away from home. Per capita food use, or consumption, is calculated by dividing the total annual food disappearance by the total U.S. population.

Food Composition Data

Food composition data used to estimate the nutrients available in the food supply are obtained from the USDA ARS's Primary Nutrient Data Set (PDS). The PDS contains about 3,000 foods and their nutrient

profiles. Food specialists develop nutrient profiles for unique items as necessary. Using the ERS per capita consumption data and nutrient information from USDA's ARS, USDA's Center for Nutrition Policy and Promotion (CNPP) calculates the nutrient content of the food supply. The per capita consumption amount for each commodity is multiplied by the amount of food energy and each of 27 nutrients and dietary components found in the edible portion of the food. Results for each nutrient from all foods are totaled and converted to amount per capita per day. Nutrients added to certain commodities commercially through fortification and enrichment are also included in the nutrient content of the food supply. Since food supply data represent the disappearance of food into the marketing system, per capita consumption and nutrient estimates typically overstate the amount of food and nutrients people actually ingest.

Food Supply Methodologies

The databases used to calculate food supply nutrient estimates are continually evolving. New sources of information are applied to food supply methodologies to better reflect market conditions and technological advances. Selected methodologies are discussed to provide information pertinent to the update of nutrient estimates for 1909-99.

Meat, Game, and Fish

Meat

The red meat industry has altered a number of marketing practices in the past three decades. Specifically, feeding practices, genetic and animal management practices, meat handling, and merchandising practices have been modified to improve production efficiency and to respond to consumers' health concerns.

Beef quantity and nutrient estimates are calculated using two sets of conversion factors. These factors are revised periodically to account for variations in quality and yield of the product and in marketing practices. One factor accounts for specifications related to closer fat trim by packers (carcass-to-wholesale) and the other adjusts for the closer trimming of fat and increased removal of bone by retailers (carcass-to-retail).

For *pork*, two conversion factors used for carcass-to-retail calculations have been adjusted downward for the series beginning in 1955 to better reflect the changing mix of lean and fat on the carcass and the smaller percentage of carcass available for fat cuts. These factors account for the separation of wholesale pork into lean and fat cuts during processing and exclude fat cuts from the total retail carcass weight.

Veal and lamb recorded fewer changes in their production and marketing. Since the early 1990's, many retailers have been trimming lamb products to a 1/8-inch trim and the PDS values used in the lamb nutrient database are reflective of leaner cuts for more recent years. Also, carcass-to-retail conversion factors used for veal from the early 1960's have been changed. These factors are more reflective of the cattle industry and more representative of the nutrient contributions from veal to the food supply.

Game

Prior to 1966, game estimates for deer, duck, and geese were provided by ERS or estimated from ERS data. Beginning with 1966, game estimates were based on game harvest data from the States or national sources and the types of game reclassified into one of five categories: deer, big game (excluding deer), small game, upland game, and waterfowl. Carcass weights for deer and big, small, and upland game were calculated with data provided by the individual States or from the Wildlife Management Institute. Carcass weights for duck and geese were calculated from data provided by the U.S. Fish and Wildlife Service. Harvest data were totaled for a particular year and adjusted based on carcass weight. These estimates were divided by the Census population data to calculate per capita quantity and nutrient estimates. Using these data, the

food supply game database was updated for 1966 through 1999. In 1999 an adjustment was made to the game estimates when upland game was dropped from the game classification due to its diminished harvest. Beginning with 1999, types of game were classified into one of four categories: deer, big game, small game, and waterfowl. This makes the database more representative of the types of game consumed and their nutrient contributions to the food supply than previously reported.

Fish

Fish production data include fish caught by commercial fishing vessels, noncommercial sources, and aquaculture. Canned and cured fish are processed from fish caught and counted separately from those that are caught for fresh and frozen distribution. Estimates for some fish in the food supply are reported as broad categories that include a number of species based on lipid content. The categories include fatty fish—those containing more than 5-percent fat; lean fish—those containing 5-percent or less of fat; and ground-dwelling fish. A nutrient composite is updated periodically for each category of fish to be more reflective of what is actually consumed.

Dairy

Since the early 1900's, the butterfat content of whole milk declined from 3.80 percent to 3.25 percent in the late 1990's. Demand by the consumer for lower levels of butterfat in milk products, Federal standards on lower minimum levels of fat in milk products, and changes in types of cows bred for milking contributed to this decline. In fact, the higher fat milk of the 1950's is almost entirely gone from the market. Revised butterfat data are applied to per capita consumption estimates for fluid milks (whole, lowfat, and skim milk) to separate into their respective fat and residual components. This results in larger quantities of the residual component and smaller quantities of the fat component for these products over the series.

Breakfast Cereals

The reporting of per capita consumption of breakfast cereals has changed over the food supply series. Cereal quantities, based on type of cereal, have been adjusted and nutrient composites developed to best reflect the nutrient content of the cereals as reported by ERS. From 1909 to 1965, ERS reported per capita estimates for wheat and corn cereals as individual items but did not account for cooked and ready-to-eat cereal quantities separately until 1966. At that time, ERS reported wheat and cereals separately as to form; nutrient data from 1966 through 1999 reflect this adjustment. In 1999 an adjustment was made to ERS quantity data for wheat flour, corn meal, rice, and oat grains to ensure that individual grain contributions from ready-to-eat cereals and cooked cereals were not double-counted in the food supply series. A percent share of each cereal grain (wheat, corn, rice, or oats) from breakfast cereals was applied to the total ERS quantity for an individual grain (wheat, corn, rice, or oats) and a new percent share calculated for each of the flour commodities. Percent share contribution of breakfast cereal grains was determined from Census of Manufactures (1999b) Flour Milling data for specific year periods. Quantity grain data in this report may be less than in previous years because of this adjustment.

Ready-to-Eat Cereals

From 1966 to 1973, the percentage contribution of each cereal (wheat or corn) was determined and applied to the per capita estimates for the total ready-to-eat cereal and subsequently linked to nutrient data specific to these two cereals. Beginning in 1974, ERS quantity data on ready-to-eat cereal were directly linked to a composite reflective of a number of cereals, not just wheat and corn. This composite includes wheat, corn, oat, rice, and mixed grain. The nutrient contribution from each of these cereals in the composite is based on cereal production data from the Census of Manufacturers and is updated every 5 years (1999a).

Cooked Cereals

Beginning in 1966, per capita estimates of cooked cereals were reported by ERS as a total. Nutrient estimates reflective of this total—wheat, oat, mixed grain, and instant cereals—are based on cereal production data from the Census of Manufactures and are updated every 5 years (1999a).

Fruits and Vegetables

In the early 1980's, USDA stopped reporting per capita values for many commercially produced fresh and processed fruits and vegetables because national production data were no longer available. However, many of these fruits and vegetables are important sources of several nutrients. To continue monitoring as many of the fresh vegetable and fruit sectors as possible, ERS commodity specialists estimated national production for a number of specific vegetables and fruits using data from those States that continued to collect production information (Putnam, 1999). These data are reflected in the nutrient contributions to the food supply from these food items.

Vegetables

In 1997 the nutrient estimates for miscellaneous canned, fresh, and frozen vegetables were revised back to 1909. These estimates were based on composite vegetable data—a mix of vegetables reflective of a variety of vegetables consumed during specific years with each vegetable directly linked to its PDS code. For canned vegetables the new composites were more reflective of consumption of miscellaneous vegetables (in terms of the mix) than previously reported.

Juices

Beginning with 1991 per capita estimates, ERS no longer distinguished between the final product form of juices such as canned or frozen juices. Since that time, per capita juice has been reported as juice gallons per capita. For the years 1991 through 1998, a method using ERS supply data was developed to distinguish between the frozen and canned forms of juices in the food supply to ensure consistency of data and to reflect nutrient contributions from these commodities. In 1999 frozen and canned forms of orange and grapefruit juice were no longer distinguished due to the lack of canned data information for these juices, and ERS per capita estimates for orange and grapefruit juices were assumed to be frozen/concentrate.

Fats and Oils

The methods for calculating per capita estimates of fats and oils have remained essentially unchanged. However, nutrient estimates for individual fatty acids were expanded in 1997 and food supply nutrients from fatty acids calculated back to 1980 (data not shown). The individual fatty acids are divided into three categories: saturated fatty acids concentrated in dairy products, red meat and poultry, and palm, palm kernel, and coconut oils; monounsaturated fatty acids found in olive, canola, and peanut oils, almonds, and avocados; and polyunsaturated fatty acids found in salad and cooking oils and fish. Polyunsaturated fatty acids have two classes—omega-6 and omega-3. Omega-6 fatty acids are found in salad and cooking oils, and fish is the primary source of omega-3 fatty acids.

During the 1900's substantial changes occurred in the American food supply. Many of these changes are linked to advances in food production and technology, Federal standards for enrichment and fortification, the Federal Dietary Guidance system, and changing consumer preferences promoting demand for nutritionally improved foods.

Food Consumption Trends by Major Food Group, 1909-99

Meat, Poultry, Fish, Eggs and Legumes, Nuts and Soy

Consumption from the meat, poultry, and fish group increased from an average of 165 pounds in 1909-19 to an average 233 pounds in 1990-99—a 41-percent increase. This was primarily due to a fivefold increase in poultry consumption from an average 17 pounds in 1909-19 to an average 87 pounds in 1990-99. During that time, red meat consumption dropped somewhat from an average of 137 pounds in 1909-19 to an average of 131 pounds in 1990-99. Fish use increased an average of 4 pounds for the same period. The consumption of legumes, nuts, and soy fluctuated over the series, but generally increased reflecting an increased use of soy products and nuts. During the first half of the 20th century, egg use increased from an average 37 pounds in 1909-19 to an average 47 pounds in 1950-1959, reflecting increased use during World War II. Since 1950-59 egg use has declined to an average 31 pounds in 1990-99 (table 1a).

Milk and Milk Products

Whole milk use increased during the first half of the 20th century from 214 pounds in 1909-19 to 299 pounds in 1940-49, reflecting increased use during World War II. Since 1940-49 demand for whole milk declined 74 percent to an average 79 pounds in 1990-99. On the other hand, use of lowfat milks (2%, 1%, and skim) decreased from an average of 58 pounds in 1909-19 to an average 27 pounds in 1950-59. Since 1950-59 use has increased nearly five times to an average 134 pounds in 1990-99. The average per capita estimate of lowfat milks in 1990-99 is 131 percent higher than the average 58 pounds in 1909-19. Over time, the increase in ethnic diversity, the demand for hard cheeses used in pizzamaking, the cheeses used in prepared foods, and the expansion in processed cheeses have increased cheese consumption from an average 5 pounds in 1909-19 to an average 30 pounds in 1990-99 (table 1a).

Grains

Despite the recent increase in grain consumption from an average 158 pounds in 1980-89 to an average 194 pounds in 1990-99; its consumption in 1990-99 is 31 percent lower than the average 280 pounds per capita in 1909-19 (table 1a). In contrast, caloric sweeteners increased substantially over the series, increasing 64 percent from an average 90 pounds in 1909-19 to an average 148 pounds in 1990-99 (table 1c). Additionally, shifts within the caloric sweeteners group have occurred. Over the series, refined sugar has been largely replaced by corn syrup, which was at an average 77 pounds per capita in 1990-99 (data not shown).

Vegetables

Although total vegetable use increased from an average 275 pounds in 1980-89 to an average 290 pounds in 1990-99, use of vegetables and vegetable juices in 1990-99 was 26 percent lower than the average 392 pounds in 1909-19 (table 1b).The major reason for the overall decrease in the use of fresh vegetables has been the marked decline—more than one-half—in the use of white (Irish) potatoes. In 1909-19 white potatoes provided an average 170 pounds; in 1990-99 this value was 85 pounds. The decline in white potato use has been slightly offset in recent years by some fresh commercial vegetables, such as carrots, bell peppers, onions, leaf and romaine lettuces, and broccoli.

Fruits

Fruit and fruit juice use fluctuated over the series but the group's use increased by an average 23 percent overall, from an average 177 pounds in 1909-19 to an average 218 pounds in 1990-99. Citrus fruits and juices increased almost four times over the series and were major contributors to the increase in the fruit group. After a decline over the first two-thirds of the century, the use of noncitrus fruits and melons has generally increased (almost 30 percent), from an average 113 pounds in 1970-79 to 144 pounds in 1990-99. However

noncitrus use is still down (almost 10 percent) from the average 158 pounds in 1909-19 (table 1b). The overall increase in fruit availability is related to increases in juice consumption and the introduction of a greater variety of fruits, including tropical fruits, into the food supply.

Fats and Oils

Total fats and oils use has also fluctuated over the series but has been on the rise since 1950-59. Overall, the fats and oils group use increased 67 percent from an average 42 pounds in 1909-19 to an average 70 pounds in 1990-99 (table 1c). Over the series, a shift has occurred from the use of animal sources to vegetable sources due to substantial increase in the use of vegetable fats, such as margarine, shortening, and oils during this same period.

Percent change in foods and nutrients, 1909-19 to 1990-99*

Foods	Percent change 1909-19 to 1990-99	Nutrients	Percent change 1909-19 to 1990-99
Meat	-4.2	Food energy	8.8
Poultry	415.9	Carbohydrate	-1.6
Fish	33.3	Dietary fiber	-17.8
Total meat, poultry, & fish	**41.3**	Protein	12.5
Whole milk	-63.2	Total fat	32.5
Lowfat milks	131.1	Saturated fat	2.0
Cheese	534.0	Monounsaturated fat	42.5
Other dairy	262.0	Polyunsaturated fat	153.8
Total dairy	**49.8**	Cholesterol	-6.8
Eggs	**-15.8**	Vitamin A	42.5
Legumes, nuts, & soy	**27.3**	Carotenes	69.7
Grain products	**-30.7**	Vitamin E	124.6
Citrus fruits	290.0	Vitamin C	33.6
Noncitrus fruits	-8.9	Thiamin	93.3
Total fruits	**23.1**	Riboflavin	61.1
White (Irish) potatoes	-50.2	Niacin	77.7
Dark-green, deep-yellow vegetables	-8.5	Vitamin B_6	14.2
Tomatoes	-4.7	Folate	39.8
Other vegetables	-8.4	Vitamin B_{12}	2.5
Total vegetables	**-26.0**	Calcium	31.1
Butter	-73.2	Phosphorus	15.2
Margarine	410.0	Magnesium	0
Shortening	136.8	Iron	68.6
Lard, beef tallow	-64.9	Zinc	18.7
Salad, cooking oils	130.0	Copper	0
Total fats, oils	**66.7**	Potassium	-2.3
Sugars, sweeteners	**64.0**	Sodium	48.9
Miscellaneous	**28.4**	Selenium	1.8

*See table notes on page 13.

AVAILABILITY AND SOURCES OF SELECTED NUTRIENTS, 1909-99

Food Energy, Macronutrients and Dietary Components

Food energy or kilocalories is the energy released from the metabolism of foods and allows the production and maintenance of body tissue cells. Over the course of the food supply series, per capita per day energy levels have been as low as 3,100 kilocalories (kcal) per capita per day and as high as 3,800 kcal (data not shown). In 1990-99 the energy level was an average 3,700 kcal per capita per day, a 9-percent increase from the average 3,400 kcal per capita per day in 1909-19 (table 2a).

Food groups have fluctuated in their contribution to food energy in the food supply. The percent share of kilocalories from grains decreased from an average 38 percent in 1909-19 to an average 24 percent in 1990-99. The fats and oils group and the sugars and sweeteners group simultaneously and similarly increased in their share of kilocalories over the years, each providing an average 13 percent in 1909-19 and an average 20 and 19 percent, respectively in 1990-99. The meat, poultry, and fish group contributed the same share of kilocalories in 1990-99 as in 1909-19 (15 percent). The dairy group also provided nearly the same share in 1909-19 as in the 1990-99 (9 and 10 percent, respectively) (tables 3a and 4a).

Carbohydrate converts to glucose—the main simple sugar used by the body for energy. Average per capita per day carbohydrate availability declined each decade until it reached an average 379 grams (g) per capita per day in 1960-69. Since then it has increased to 478 g per capita per day in 1990-99, which is still lower (2 percent) than the average 486 g per capita per day in 1909-19 (table 2a). Grain products, fruits, vegetables, and sweeteners are important sources of carbohydrate in the food supply. In 1909-19 the major contributors to carbohydrate was grains (55 percent), followed by the sugars and sweeteners (23 percent) and fruits and vegetables collectively (15 percent). In 1990-99 grains and sugars and sweeteners contributed similar shares (38 percent), followed by fruits and vegetables collectively (15 percent) (tables 3a and 4a).

Dietary fiber is primarily the storage and cell wall of polysaccharides found in plants and resistant to human digestive enzymes. The two major kinds of dietary fiber are soluble fiber (found in fruits, vegetables, dry beans and peas, and cereals such as oats) and insoluble fiber (found in whole grains). Over the series, consumption of dietary fiber dropped about 18 percent from an average 28 g per capita per day in 1909-19 to an average 23 g per capita per day in 1990-99. However, levels in 1990-99 were 28 percent higher than the average low of 18 g per capita per day during the 1960's (table 2a). In 1909-19 grain products provided the highest percentage of dietary fiber in the food supply (49 percent), followed by vegetables (26 percent) and fruits (13 percent). In 1990-99 grain products' contribution dropped 13 percent to an average 36 percent in 1990-99; however, contributions in 1990-99 from vegetables and fruits were similar to 1909-19 contributions (27 and 12 percent, respectively). The drop in grain contributions was made up by the increased contribution from miscellaneous foods (mostly spices) from an average 2 percent in 1909-19 to an average 11 percent in 1990-99. Also, the legume, nuts, and soy group has made valuable contributions to dietary fiber in the food supply, increasing from an average 10 percent in 1909-19 to an average 14 percent in 1990-99 (tables 3a and 4a).

Protein provides amino acids to build and maintain body tissues, forms enzymes necessary for body reactions, and combines with fatty acids to transport vitamins and minerals in the body. In 1990-99 the food supply provided an average 108 g per capita per day of protein, 13 percent more than the average 96 g in 1909-19 (table 2a). In 1909-19 grain products contributed the most protein to the food supply (37 percent), followed by the meat, poultry, and fish group (30 percent). In 1990-99 the meat, poultry, and fish group was the lead contributor of protein to the food supply (39 percent), followed by grain products (22 percent). The dairy group has ranked third, contributing an

average 15 percent of the protein in 1909-19 and an average 20 percent in 1990-99. In both 1909-19 and 1990-99, eggs and the legumes, nuts, and soy group contributed about 10 percent of the total protein to the food supply (tables 3a and 4a).

Fats are the major source of energy storage, help to hold body organs and nerves in position, protect against injury and shock, insulate and maintain body temperature, and act in the transportation and absorption of fat-soluble vitamins. U.S. food supply fat estimates include levels for saturated fatty acids, monounsaturated fatty acids, polyunsaturated fatty acids, and cholesterol. Total fat increased about 33 percent between 1909-19 and 1990-99 from an average 120 g to an average 159 g per capita per day. Shifts in the types of fat used during this period showed a trend to the increased use of unsaturated fats. In 1990-99 both monounsaturated and polyunsaturated fat use increased, the latter by about 154 percent since 1909-19. The increase in polyunsaturated fats reflects increases in soybean and corn oils and nuts; whereas, the increase in monounsaturated fats reflects an increase in olive, sunflower, and canola oils (table 2a).

Cholesterol is a component of cell membranes and is involved with biosynthesis of steroids found in animal products. Good sources include red meat, butter, and eggs. However, cholesterol has been linked to a number of health issues primarily related to the risk of cardiovascular disease. Cholesterol increased from an average 440 milligrams (mg) per capita per day in 1909-19 to an average 510 mg in 1940-49 due to the increase in egg use during World War II. Since 1940-49 cholesterol has decreased 20 percent to an average 410 mg per capita per day in 1990-99. In 1909-19 eggs were the primary contributors of cholesterol (38 percent), followed by the meat, poultry, and fish group (32 percent). In 1990-99 the meat, poultry, and fish group was the lead contributor of total cholesterol (44 percent), followed by eggs (35 percent). The increased cholesterol contribution by the meat, poultry, and fish group in 1990-99 reflects the increased use of poultry. Dairy group contributors were similar in 1909-19 and in 1990-99 (16 percent); however, there was a shift from whole milk to cheese as the lead dairy contributor (tables 3a and 4a).

Vitamins and Minerals

Antioxidant Vitamins

Many vitamins act as coenzymes or as parts of enzymes responsible for essential chemical reactions necessary for health. Antioxidants such as vitamins A, C, and E help protect healthy cells from damage by free radicals. Normal body functions, such as breathing or physical activity, and other lifestyle habits, such as smoking, produce substances called free radicals that attack healthy cells, weakening them. Weakened cells are more susceptible to cardiovascular disease and certain types of cancers.

Vitamin A is a fat-soluble antioxidant vitamin essential for vision, growth, bone development, development and maintenance of healthy skin, the integrity of the immune system, and reproduction. The vitamin A found in deep-yellow and dark-green leafy vegetables and fruits is known as carotenoids. Carotenoids protect the body against many diseases including some types of cancer. In the U.S. food supply, total vitamin A increased from an average 1,200 micrograms (mcg) retinal equivalents (RE) per capita per day in 1909-19 to an average 1,710 mcg RE per capita per day in 1990-99. The increase in vitamin A in the 1970's (1,540 mcg RE) was due to the 1960's development of new varieties of deep-yellow vegetables such as carrots with a higher vitamin A content. The increased vitamin A value in the 1980's and 1990's is due to the increased availability of dark-green and deep-yellow vegetables such as broccoli and carrots; the revision of the miscellaneous vegetable composites that resulted in a different, more reflective mix of these nutrients (table 2b).

In 1909-19, the meat, poultry, and fish group was the leading source of vitamin A (34 percent), mainly due to contributions from organ meats. In 1990-99 vegetables were the leading contributor of vitamin A (36 percent), mainly due to the contributions from deep-yellow and

dark-green vegetables (31 percent). In both decades dairy products made important contributions to the total vitamin A in the food supply, providing an average 14 percent in 1909-19 and an average 16 percent in 1990-99. Total vegetables also provided an average 74 and 82 percent of the carotenes in the food supply in 1909-19 and in 1990-99, respectively (tables 3b and 4b).

Vitamin E is a fat-soluble antioxidant vitamin that prevents vitamin A and essential fatty acids from breaking down (oxidizing) and protects the body from cell damage that can lead to cancer, heart disease, and cataracts with age. In the food supply, vitamin E is found mostly in fats and oils. In 1990-99 the level of vitamin E in the food supply was up 125 percent from an average 7.7 mg alpha-tocopheral equivalent (TE) per capita per day in 1909-19 to an average 17.3 mg alpha-TE per capita per day in 1990-99 (table 2b). This reflects the increased use of soybean, corn, sunflower, olive, and canola oils over the course of the food supply series. In 1909-19 fats and oils contributed an average 38 percent of vitamin E to total food supply, followed by grain products (18 percent) and total vegetables (11 percent). In 1990-99 fats and oils provided an average 69 percent of the vitamin E, followed by a decreased share of grain products (5 percent) and total vegetables (7 percent) (tables 3b and 4b).

Vitamin C is a water-soluble antioxidant vitamin that is important in forming collagen, giving structure to bones, cartilage, muscle, and blood vessels. Vitamin C also helps to maintain capillaries, bones, and teeth and aids in wound healing and iron absorption. In 1990-99 the level of vitamin C in the food supply was an average 127 mg per person per day, a level 34 percent higher than the average 95 mg per capita per day than in 1909-19 (table 2b). The fruit and vegetable share of vitamin C in the food supply has historically provided about 90 percent of the total vitamin C in the food supply. In 1909-19 white potatoes were an important source of vitamin C in the food supply (32 percent), but in 1990-99 the share from white potatoes dropped (15 percent). The vitamin C contributions from citrus fruits increased from an average 9 percent in 1909-19 to an average 26 percent in 1990-99, while those from noncitrus fruits remained about the same (15 percent) (tables 3b and 4b).

B-Vitamins

Thiamin—a water-soluble vitamin—helps the body release energy from carbohydrates. *Riboflavin* and *niacin*—also water-soluble vitamins—help the body to release energy from protein, fat, and carbohydrates. Between 1909-19 and 1990-99, the food supply levels of these vitamins increased as follows: thiamin increased from an average 1.5 to an average 2.9 mg per capita per day; riboflavin, from an average 1.8 to an average 2.9 mg per capita per day; and niacin, from an average 18 to an average 32 mg per capita per day (table 2b). In 1909-19 the meat, poultry, and fish group and grains group provided similar amounts of thiamin to the food supply (31 percent), followed by contributions from total vegetables (17 percent). In 1909-19 the main contributor of riboflavin was the dairy group (34 percent), followed by the meat, poultry, and fish group (24 percent) and grain products (14 percent). In 1909-19 the main contributor of niacin was the meat, poultry, and fish group (40 percent), followed by the grain products (28 percent) and vegetable group (21 percent). In 1990-99 grain products were the main contributor of thiamin, riboflavin, and niacin (60, 40, and 46 percent, respectively) to the food supply. These increased contributions from grain products reflect flour and cereal enrichment with these nutrients (tables 3b and 4b).

As a coenzyme, *vitamin* B_6 aids in the synthesis and breakdown of amino acids, fatty acid synthesis, and the conversion of the amino acid tryptophan to niacin. Vitamin B_6 levels in the food supply increased from an average 2.1 mg per capita per day in 1909-19 to an average 2.4 mg per capita per day in 1990-99 (table 2b). Vitamin B_6 is found mainly in fortified ready-to-eat breakfast cereals; meat, poultry, and fish; white potatoes, and noncitrus fruits. The main contributors of vitamin B_6 to the food supply were similar for 1909-19 and 1990-99—vegetables; meat, poultry, and fish; and grain products. In 1909-19 the vegetable group was the

leading contributor of vitamin B_6 (32 percent), followed by the meat, poultry, and fish group (27 percent) and the grain group (18 percent). In 1990-99 the meat, poultry, and fish group took the lead, providing an average 34 percent of the total vitamin B_6 in the food supply, followed by the vegetable group at an average 21 percent. In 1909-19 and 1990-99 grains contributed similar amounts of vitamin B_6 to the food supply (18 and 20 percent, respectively) (tables 3b and 4b).

Folate functions as a coenzyme and is essential for the biosynthesis of nucleic acids and normal maturation of red blood cells. Low serum folate levels have been associated with elevated serum homocysteine, an independent risk factor for vascular disease and, during pregnancy, with the increased risk for neural-tube defects (Federation of American Societies for Experimental Biology, 1995). The lowest level of folate in the food supply was an average 275 mcg per capita per day in the 1960's (table 2b). This low was caused by a decreased use of vegetables, mostly white potatoes and grain products during that time. The highest level of folate—641 mcg per capita per day in 1999—was mainly due to flour and breakfast cereal fortification mandated in 1998 (data not shown).

Vegetables were the leading source of folate prior to the 1970's, accounting for an average 28 percent of the folate in the food supply in 1909-19, followed by grain products (24 percent) and legumes, nuts, and soy (22 percent). In 1990-99 folate contributions from grain increased (38 percent) due to flour and cereal fortification, and contributions from vegetables and legumes, nuts, and soy dropped (19 and 16 percent, respectively). The contribution of folate from fruits in 1990-99 more than doubled the contribution in 1909-19, increasing from an average 4 percent to an average 10 percent, reflecting the increased use of fresh and processed citrus commodities (tables 3b and 4b).

Vitamin B_{12}—a water-soluble vitamin—aids in the formation of red blood cells and the functioning of the nervous system. Unlike the other B vitamins, B_{12} is normally found in animal products. It does occur in some plant foods such as fortified breakfast cereals. Vitamin B_{12} levels increased from 7.8 mcg per capita per day in 1909-19 to 8.9 mcg per capita per day in 1970-79, then declined to an average 8.0 mcg per capita per day in 1990-99. The decline in more recent years reflects the overall decrease of red meat and egg use during this same time (tables 1a and 3b). The meat, poultry, and fish group has been the primary contributor of vitamin B_{12} in 1909-19 and 1990-99 (77 and 74 percent, respectively). The dairy group and eggs collectively made important vitamin B_{12} contributions in both decades, contributing an average 27 percent in 1909-19 and an average 22 percent in 1990-99 (tables 3b and 4b).

Minerals

Calcium is essential for the formation of bones and teeth and requirements are greatest during adolescence and later adult years. Calcium is very important from a public health perspective because inadequate intake of calcium may increase the risk of osteoporosis, a condition in which decreased bone mass weakens bone. The sources of calcium available in the food supply have shifted over the years. Despite the decreased use of whole milk, use of lowfat milks, yogurt, and cheese increased and thus overall calcium levels increased 31 percent from an average 740 mg per capita per day in 1909-19 to an average 970 mg per capita per day in 1990-99 (table 2c).

Dairy products, have always been the predominant source of calcium in the food supply; however, a shift within the dairy group—decreased use of whole milk and increased use of lowfat and skim milks—has occurred over the years. In 1909-19 whole milk accounted for an average 43 percent of the calcium in the food supply, whereas it contributed only an average 12 percent in 1990-99. Even though the share of calcium contributed by lowfat milks has increased, it does not completely compensate for the calcium loss due to the decreased use of whole milk. The share of calcium provided by cheese was more than four times higher in 1990-99 (23 percent) than in 1909-1919 (5 percent) (tables 3c and 4c).

Phosphorus helps build strong bones and teeth and is involved in the release of energy from fat, protein, and carbohydrates. Despite fluctuations in phosphorus availability over the course of the food supply series, phosphorus increased 15 percent from an average 1,440 mg per capita per day in 1909-19 to an average 1,660 mg per capita per day in 1990-99 (table 2c). In 1909-19 the primary contributor of phosphorus to the food supply was the grain group (29 percent), followed by the dairy group (27 percent) and the meat, poultry, and fish group (21 percent). In 1990-99 dairy products were the lead contributor of phosphorus (34 percent), followed by the meat, poultry, and fish group (24 percent). Contributions from grains dropped by 9 points to an average 19 percent in 1990-99 due to a decrease in grain use from that of 1909-19. Within the dairy group there was a shift from whole milk contributions in 1909-19 from an average 17 percent to an average 6 percent in 1990-1999 to lowfat milk with an average of 5 percent and cheese an average of 2 percent in 1909-19 to an average 10 percent each in 1990-1999 (tables 3c and 4c).

Magnesium is also important in building bones and is used in manufacturing proteins, releasing energy from muscle storage, and regulating body temperature. Per capita estimates of magnesium fluctuated somewhat over the series; however, levels in 1990-99 were the same as in 1909-19—an average 380 mg per capita per day (table 2c). The main contributor of magnesium in the food supply in 1909-19 was grains (36 percent), followed by vegetables (18 percent) and dairy (13 percent). Grain products, despite a drop in contribution to an average 23 percent, remained the primary source of magnesium in 1990-99. In 1990-99 vegetable and dairy contributions to the total magnesium in the food supply were an average 14 and 17 percent, respectively. Contributions from miscellaneous foods increased from an average 7 percent in 1909-19 to an average 13 percent in 1990-99, and this increase is responsible in some part for the decreased contribution from grain products (tables 3 and 4).

Iron is found in all body cells. As a component of hemoglobin in the blood and myoglobin in the muscles, iron carries oxygen. Iron deficiency anemia is the most common nutritional deficiency in the United States. Infants, adolescents, and women of childbearing age are the most at risk for developing anemia. Their greater need for iron, due to rapid growth or excessive blood loss during menstruation, usually cannot be met by dietary intake alone.

Iron levels dropped from an average 13.7 mg per capita per day in 1909-19 to an average 14.4 mg per capita per day in 1950-59, then increased to an average 23.1 mg per capita per day in 1990-99. Enrichment of flour with iron and the increased consumption of enriched grains and fortified ready-to-eat breakfast cereals are the reasons for the increase in iron levels (table 2c). The predominant source of iron in the food supply is grain products. In 1909-19 grain products accounted for an average 33 percent of the iron in the food supply. However, by 1990-99 the grain product's share had increased to an average 54 percent. After grain products, the meat, poultry, and fish group ranked as a secondary source of iron. The group provided an average 19 percent of the total iron in 1909-19 and an average 15 percent in 1990-99. In 1909-19 the vegetable group furnished an average 18 percent of the iron in the food supply, but in 1990-99, that share dropped to an average 10 percent, in part due to a decreased use of white potatoes (tables 3c and 4c).

Zinc plays an important role in wound healing, blood formation, and general growth and maintenance of tissues. As a component of enzymes, it is involved in most metabolic processes. Zinc levels increased in the food supply from an average of 12.8 mg per capita per day in 1909-19 to an average 15.2 mg per capita per day in 1990-99 (table 2c). In both 1909-19 and in 1990-99, the meat, poultry, and fish group was the lead contributor of zinc in the food supply (42 and 36 percent, respectively). Grain products have been a secondary contributor of this nutrient (24 and 28 percent, respectively) (tables 3c and 4c).

Copper is necessary for the formation of hemoglobin and also keeps bones, blood vessels, and nerves healthy. Copper levels fluctuated somewhat over the series but were at the same level, an average 1.9 mg per capita per day, in 1909-19 and in 1990-99 (table 4c). In 1909-19 the vegetable group was the leading source of copper (30 percent), followed by grain products (28 percent) and the meat, poultry, and fish group (16 percent). In 1990-99 grains replaced vegetables as the leading source of copper (23 percent), followed by the legumes, nuts, and soy group (20 percent) and the vegetable group (19 percent) (tables 3c and 4c).

Potassium assists in muscle contraction and electrolyte balance in body cells. It is needed to send nerve impulses and to release energy from protein, fat, and carbohydrates. Per capita estimates of potassium fluctuated but generally decreased over time from an average 3,880 mg per capita per day in 1909-19 to an average 3,790 mg per capita per day in 1990-99 (table 2c). Fruits, vegetables (especially white potatoes), and foods from the meat, poultry, and fish group are considered good sources of this mineral. In 1909-19 total vegetables were the key contributor of potassium (36 percent), followed by the dairy group (15 percent) and grain products (12 percent). In 1990-99 the vegetable group provided an average 26 percent, followed by the dairy group (19 percent) and the meat, poultry, and fish group (16 percent). Total fruit contributions increased from an average 8 percent in 1909-19 to an average 11 percent in 1990-99 (tables 3c and 4c).

Sodium is important in electrolyte balance and also in regulation of the body's blood pressure. Food supply per capita estimates for sodium steadily increased over the series and were 49 percent higher in 1990-99 at an average 1,370 mg per capita per day, compared with an average 940 mg per capita per day in 1909-19 (table 2c). Higher sodium levels in the later years of the series were due to the increased consumption of cheese and processed vegetables (largely tomatoes and white potatoes). With the exception of vegetables, sodium estimates in the food supply do not account for sodium added in processing, and thus sodium values are underestimated. This also means that the relative contribution of vegetables to sodium reported in the food supply are likely overstated. The meat, poultry, and fish group, dairy group, and vegetable group each account for significant contributions of sodium to the food supply. The meat, poultry, and fish group provided an average 35 percent of the total sodium in 1909-19, followed by the dairy group (24 percent) and fats and oils (20 percent). Over the series, the dairy group has become the primary contributor of sodium, mainly due to cheese consumption, providing an average 32 percent in 1990-99. With the increase in processed potato and tomato products in recent years, vegetable contributions of sodium to the food supply increased almost threefold from 10 percent in 1909-19 to 28 percent in 1990-99 (tables 3c and 4c).

Selenium has antioxidant properties and like vitamin E protects cells from oxidative damage. Per capita estimates for this nutrient declined over much of the series until 1990-99 when it increased to an average 162 mcg per capita per day, a 2-percent increase from the average 159 mcg per capita per day in 1909-19 (table 2c). In 1909-19 and in 1990-99, the main contributor of selenium in the food supply was the grain group (63 and 40 percent, respectively). The meat, poultry, and fish group has been a secondary source of selenium, providing an average 11 percent in 1909-19 (same as the dairy group) and an average 29 percent in 1990-99 (tables 3c and 4c).

Table Notes for Table 1

To determine nutrient estimates from the major commodity groups and the percentage contribution by nutrients for each of these groups, pounds of food per capita per year by major food groups in the U.S. food supply were adapted from data published in ERS's series, "Food Consumption, Prices, and Expenditures" (Putnam & Allshouse, 1999). Data include USDA estimates of fruits and vegetables from home gardens and imputed consumption data for foods no longer reported by ERS.

Pounds of most foods are totaled on the basis of their retail weights to achieve consistency in aggregating different foods. Summing dissimilar forms of foods—such as liquids, solids, and concentrated products—makes it difficult to interpret changes in these data. Because of increased processing of foods over the years, pounds of food measured in equivalent weights are more appropriate for analyses of food trends. Totals for other milk products, total dairy products, and total sugars and sweeteners are measured in equivalent weights. However, caution must be used in interpreting the pounds per capita for other foods in this report to avoid misleading implications from either their levels or trends. For information on levels of individual foods, see the references.

Meat: Reported as fresh retail cut equivalent, which includes all meat cuts obtained from carcass and trimmed for retail sale. Includes game, organ meats, and fat cuts of pork.

Poultry: Reported as ready-to-cook weight. Ready-to-cook poultry weight is the entire dressed bird, which includes the bones, skin, fat, liver, heart, gizzard, and neck. Includes game birds.

Fish: Reported on edible-weight basis, which excludes such offal as bones, viscera, and shells. Includes game fish.

Eggs: Reported as shell-equivalent weight, which includes shell eggs and the approximate shell-egg equivalent of dried and frozen eggs.

Other milk products: Includes creams, evaporated and condensed milks (canned and bulk), dry milk, whey, yogurt, sour cream, eggnog, and ice cream and frozen desserts.

Reported as calcium-equivalent weight, which is the amount of fluid whole cow's milk that has the same quantity of calcium as other milk products. For example, the calcium equivalent of 1.5 pounds of cheddar cheese is calculated as follows:

1. Derive calcium conversion factor.

$$\frac{\text{calcium in 1 pound cheddar cheese}}{\text{calcium in 1 pound fluid milk}} = \frac{3{,}275 \text{ mg}}{560 \text{ mg}} = 5.85$$

2. Multiply amount of cheddar cheese by calcium conversion factor.

1.5 pounds x 5.85 = 8.78 pounds

Total milk products: Reported as calcium-equivalent weight.

Total grain products: Includes wheat flour, rye flour, rice, corn flour, corn meal, hominy and corn grits, oat products, barley products, and ready-to-cook and ready-to-eat breakfast cereals.

Lard and beef tallow: Excludes use in margarine and shortening.

Total fruits: Reported as product weight except for concentrated juices, which are on a single-strength basis.

Total other fresh vegetables: Includes dark-green and deep-yellow types, tomatoes, and others.

Miscellaneous: Includes instant and regular coffee reported on roasted basis; tea reported as leaf equivalent; cocoa reported as chocolate-liquor equivalent of cocoa beans, which is what remains after cocoa beans have been roasted and hulled; and spices.

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Table 1a. Foods per capita per decade by major food groups in the U.S. food supply, 1909-99*

Year	Meat	Poultry	Fish	Total meat, poultry, & fish	Whole milk	Lowfat milks	Cheese	Other dairy	Total dairy	Eggs	Legumes, nuts, & soy	Grain products
1909-19	136.8	16.9	11.1	164.8	214.2	57.8	4.7	40.0	336.3	36.6	16.1	280.0
1920-29	131.8	16.4	11.4	159.6	236.6	50.0	5.4	67.5	379.4	39.3	15.7	238.6
1930-39	124.0	16.5	9.9	150.4	242.0	45.3	6.5	85.3	407.1	37.1	17.7	212.3
1940-49	147.2	22.3	9.8	179.3	299.0	38.4	8.5	129.2	505.5	43.4	19.1	193.1
1950-59	144.7	29.3	10.9	184.9	285.4	27.3	11.7	129.1	497.1	47.1	17.0	156.0
1960-69	149.8	41.0	10.7	201.5	247.9	32.3	14.2	137.5	474.7	40.8	16.9	146.0
1970-79	152.6	50.4	12.5	215.5	186.6	66.7	19.2	138.0	474.3	36.6	17.9	138.7
1980-89	141.6	64.8	13.8	220.2	123.2	105.1	25.4	133.2	482.4	33.0	18.9	157.5
1990-99	131.0	87.2	14.8	233.0	78.7	133.6	29.8	144.8	503.9	30.8	20.5	194.0

Table 1b. Foods per capita per decade by major food groups in the U.S. food supply, 1909-99*

Year	Citrus fruits	Noncitrus fruits	Total fruits	White potatoes	Dark-green, deep-yellow vegetables	Tomatoes	Other vegetables	Total vegetables
1909-19	19.0	158.1	177.1	169.6	35.1	46.4	141.0	392.1
1920-29	29.5	159.9	189.3	146.7	39.6	41.5	152.5	380.4
1930-39	42.7	148.5	191.2	129.4	42.4	46.0	157.3	375.1
1940-49	65.2	138.8	203.9	120.1	41.0	52.9	161.6	375.5
1950-59	59.9	126.7	186.6	100.6	28.7	45.2	135.8	310.4
1960-69	54.6	112.8	167.3	87.6	24.4	36.1	123.0	271.1
1970-79	71.4	112.5	184.0	80.8	23.8	44.7	127.1	276.3
1980-89	71.8	132.3	204.2	97.2	25.4	43.2	127.0	274.7
1990-99	74.1	144.0	218.1	84.6	32.1	44.2	129.1	290.0

Table 1c. Foods per capita per decade by major food groups in the U.S. food supply, 1909-99*

Year	Butter	Margarine	Shortening	Lard, beef tallow	Salad, cooking oils	Total fats, oils	Sugars, sweeteners	Miscellaneous foods
1909-19	16.8	1.9	9.5	11.4	2.1	41.7	90.0	11.6
1920-29	17.4	2.3	8.3	12.8	4.2	44.9	112.6	13.9
1930-39	17.6	2.5	10.3	12.3	5.9	48.5	111.6	15.6
1940-49	12.6	4.1	9.5	12.7	7.1	45.9	105.0	19.0
1950-59	8.9	8.0	10.9	10.6	9.7	48.1	109.3	16.6
1960-69	6.5	9.9	14.6	6.2	13.8	51.0	114.5	16.2
1970-79	4.7	11.2	17.4	3.1	20.2	56.6	123.3	14.7
1980-89	4.6	10.9	20.4	3.1	25.2	64.0	126.5	13.8
1990-99	4.5	9.7	22.5	4.0	29.4	70.3	147.6	14.9

*See table notes.

Table 2a. Food energy and macronutrients per capita per day in the U.S. food supply by decade, 1909-99*

Year	Food energy	Carbohydrate	Dietary fiber	Protein	Total fat	Saturated fat	Mono-unsaturated fat	Poly-unsaturated fat	Cholesterol
	Kilocalories		*Grams*				*Milligrams*		
1909-19	3400	486	28	96	120	50	47	13	440
1920-29	3400	474	26	92	127	54	49	15	470
1930-39	3300	447	25	89	129	55	50	15	450
1940-49	3300	426	24	98	138	56	54	18	510
1950-59	3100	386	20	93	138	55	55	19	500
1960-69	3100	379	18	93	143	54	56	22	470
1970-79	3200	387	19	95	149	51	60	28	440
1980-89	3400	411	20	98	156	52	63	31	420
1990-99	3700	478	23	108	159	51	67	33	410

Table 2b. Vitamins per capita per day in the U.S. food supply by decade, 1909-99*

Year	Vitamin A	Carotenes	Vitamin E	Vitamin C	Thiamin	Riboflavin	Niacin	Vitamin B_6	Folate	Vitamin B_{12}
	Micrograms Retinol		*Milligrams Alpha-Tocopherol Equivalent*	*Milligrams*					*Micrograms*	
1909-19	1200	430	7.7	95	1.5	1.8	18	2.1	309	7.8
1920-29	1260	470	8.5	100	1.5	1.8	17	2.0	305	7.6
1930-39	1280	510	9.2	104	1.4	1.8	16	1.9	309	7.2
1940-49	1420	510	10.3	112	1.9	2.3	20	2.0	325	8.6
1950-59	1310	410	10.7	98	1.8	2.3	19	1.8	292	8.6
1960-69	1320	390	12.0	93	1.8	2.2	20	1.8	275	8.9
1970-79	1540	550	13.9	110	2.2	2.5	24	2.0	310	8.9
1980-89	1560	590	15.5	117	2.5	2.7	28	2.2	343	8.1
1990-99	1710	730	17.3	127	2.9	2.9	32	2.4	432	8.0

Table 2c. Minerals per capita per day in the U.S. food supply by decade, 1909-99*

Year	Calcium	Phosphorus	Magnesium	Iron	Zinc	Copper	Potassium	Sodium	Selenium
	Milligrams								*Micrograms*
1909-19	740	1440	380	13.7	12.8	1.9	3880	920	159
1920-29	810	1430	370	13.0	12.1	1.9	3810	1010	150
1930-39	850	1410	360	12.7	11.5	1.8	3770	1020	142
1940-49	990	1570	380	14.9	12.5	1.9	4040	1160	144
1950-59	960	1480	340	14.4	11.8	1.7	3670	1200	135
1960-69	920	1460	330	14.6	11.9	1.6	3500	1270	128
1970-79	910	1470	330	16.1	12.9	1.6	3490	1360	130
1980-89	910	1520	340	19.4	13.9	1.8	3530	1350	139
1990-99	970	1660	380	23.1	15.2	1.9	3790	1370	162

*See table notes.

Table 3a. U.S. food supply: Percentage of macronutrients contributed by major food groups, 1909-19*

Foods	Food energy	Carbohydrate	Dietary fiber	Protein	Total fat	Saturated fat	Mono-unsaturated fat	Poly-unsaturated fat	Cholesterol
Meat	13.3	0.1	0	24.3	32.3	30.2	37.3	25.3	27.2
Poultry	0.8	0	0	3.1	1.5	1.0	1.5	2.9	3.1
Fish	0.6	0	0	2.6	0.7	0.3	0.7	1.8	1.8
Total meat, poultry, & fish	**14.7**	**0.1**	**0**	**30.0**	**34.5**	**31.5**	**39.5**	**30.0**	**32.1**
Whole milk	5.1	2.5	0	9.0	8.4	12.5	6.2	2.8	9.3
Lowfat milks	0.7	0.7	0	2.6	0.2	0.3	0.1	0.1	0.6
Cheese	0.6	0	0	1.4	1.3	2.1	1.0	0.4	1.2
Other dairy	2.1	0.8	0	1.5	4.8	7.1	3.5	1.6	4.5
Total dairy	**8.5**	**4.0**	**0**	**14.5**	**14.7**	**22.0**	**10.8**	**4.9**	**15.6**
Eggs	**1.8**	**0.1**	**0**	**5.2**	**3.3**	**2.5**	**3.2**	**4.1**	**38.4**
Legumes, nuts, & soy	**2.3**	**2.1**	**10.0**	**4.9**	**2.2**	**0.9**	**2.4**	**6.8**	**0**
Grain products	**37.6**	**54.8**	**49.2**	**36.7**	**4.1**	**1.6**	**1.7**	**15.7**	**0.1**
Citrus fruits	0.2	0.4	1.4	0.2	0	0	0	0	0
Noncitrus fruits	2.7	4.8	11.4	0.9	0.5	0.2	0.2	1.2	0
Total fruits	**2.9**	**5.2**	**12.8**	**1.1**	**0.5**	**0.2**	**0.2**	**1.2**	**0**
White potatoes	4.0	6.3	9.7	3.7	0.1	0.1	0	0.5	0
Dark-green, deep-yellow vegetables	0.9	1.4	3.5	0.6	0.1	0	0	0.3	0
Tomatoes	0.4	0.6	2.3	0.5	0.1	0	0.1	0.5	0
Other vegetables	1.2	1.9	10.1	2.1	0.3	0.1	0.1	1.1	0
Total vegetables	**6.5**	**10.2**	**25.6**	**6.9**	**0.6**	**0.2**	**0.2**	**2.4**	**0**
Butter	4.4	0	0	0.2	14.1	21.0	10.4	4.7	10.3
Margarine	0.6	0	0	0	1.8	1.4	2.0	3.1	0.3
Shortening	3.1	0	0	0	9.8	5.9	14.3	6.2	0.2
Lard, beef tallow	3.8	0	0	0	11.8	11.1	13.5	12.1	3.0
Salad, cooking oils	0.7	0	0	0	2.2	1.4	1.6	8.5	0
Total fats, oils	**12.6**	**0**	**0**	**0.2**	**39.7**	**40.8**	**41.8**	**34.6**	**13.8**
Sugars, sweeteners	**12.8**	**23.0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Miscellaneous foods	**0.3**	**0.5**	**2.4**	**0.5**	**0.4**	**0.3**	**0.2**	**0.3**	**0**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

*See table notes.

Table 3b. U.S. food supply: Percentage of vitamins contributed by major food groups, 1909-19*

Foods	Vitamin A	Carotenes	Vitamin E	Vitamin C	Thiamin	Riboflavin	Niacin	Vitamin B_6	Folate	Vitamin B_{12}
Meat	28.5	0	5.0	1.5	30.1	20.6	31.5	23.2	5.3	65.2
Poultry	4.4	0	0.8	0.4	0.7	1.9	5.2	2.5	1.8	2.6
Fish	0.6	0	1.6	0.1	0.6	1.0	3.0	1.5	0.5	9.6
Total meat, poultry, & fish	**33.5**	**0**	**7.4**	**2.0**	**31.4**	**23.5**	**39.7**	**27.1**	**7.6**	**77.4**
Whole milk	7.7	2.0	3.9	2.6	5.2	23.6	1.2	5.1	4.3	11.8
Lowfat milks	0.2	0	0.7	0.7	1.4	5.6	0.3	1.4	1.2	3.4
Cheese	1.2	0.2	0.3	0	0.1	1.1	0	0.2	0.3	0.7
Other dairy	4.5	1.2	1.8	0.4	0.8	3.8	0.2	0.6	0.6	1.1
Total dairy	**13.6**	**3.4**	**6.7**	**3.7**	**7.5**	**34.0**	**1.7**	**7.3**	**6.4**	**17.0**
Eggs	**6.4**	**0**	**5.5**	**0**	**1.6**	**11.1**	**0.2**	**2.5**	**6.1**	**5.1**
Legumes, nuts, & soy	**0**	**0**	**6.4**	**0**	**6.1**	**1.6**	**3.1**	**3.0**	**21.6**	**0**
Grain products	**1.7**	**4.6**	**17.7**	**0.1**	**31.2**	**14.3**	**28.3**	**17.6**	**24.1**	**0.2**
Citrus fruits	0.2	0.6	0.5	8.7	0.8	0.3	0.2	0.5	1.4	0
Noncitrus fruits	4.3	12.0	7.0	14.6	3.1	2.9	2.8	8.1	2.7	0
Total fruits	**4.5**	**12.6**	**7.5**	**23.3**	**3.9**	**3.2**	**3.0**	**8.6**	**4.1**	**0**
White potatoes	0	0	1.3	31.6	9.0	2.8	13.8	21.3	7.1	0
Dark-green, deep-yellow vegetables	21.0	58.0	1.9	8.4	1.5	2.3	1.4	3.6	2.3	0
Tomatoes	2.8	6.7	3.4	10.2	1.8	1.2	2.0	2.2	2.5	0
Other vegetables	3.3	9.2	3.9	20.4	5.1	3.5	3.6	5.3	16.0	0
Total vegetables	**27.0**	**73.9**	**10.5**	**70.6**	**17.4**	**9.8**	**20.8**	**32.4**	**27.9**	**0**
Butter	13.0	4.1	4.3	0	0.1	0.4	0.1	0	0.2	0.3
Margarine	0	0	2.5	0	0	0	0	0	0	0
Shortening	0	0	19.7	0	0	0	0	0	0	0
Lard, beef tallow	0	0	2.2	0	0	0	0	0	0	0
Salad, cooking oils	0	0	9.4	0	0	0	0	0	0	0
Total fats, oils	**13.0**	**4.1**	**38.1**	**0**	**0.1**	**0.4**	**0.1**	**0**	**0.2**	**0.3**
Sugars, sweeteners	**0**	**0**	**0**	**0**	**0.6**	**1.0**	**0.1**	**1.2**	**0**	**0**
Miscellaneous foods	**0.3**	**1.4**	**0.2**	**0.3**	**0.2**	**1.1**	**3.0**	**0.3**	**2.0**	**0**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

*See table notes.

Table 3c. U.S. food supply: Percentage of minerals contributed by major food groups, 1909-19*

Foods	Calcium	Phosphorus	Magnesium	Iron	Zinc	Copper	Potassium	Sodium	Selenium
Meat	1.4	17.4	6.6	16.1	29.8	11.4	9.9	27.3	7.0
Poultry	0.2	1.7	0.8	1.5	1.7	0.5	0.8	1.2	1.1
Fish	1.8	2.2	1.2	1.7	10.4	3.9	1.1	6.0	3.3
Total meat, poultry, & fish	**3.4**	**21.3**	**8.6**	**19.3**	**41.9**	**15.8**	**11.8**	**34.5**	**11.4**
Whole milk	42.5	17.2	9.5	1.0	7.9	1.4	10.3	14.1	7.1
Lowfat milks	11.9	5.0	2.2	0.2	2.2	0.4	3.1	4.0	2.8
Cheese	4.8	1.8	0.4	0.2	1.2	0.1	0.2	3.2	0.5
Other dairy	6.7	2.9	1.2	0.2	1.2	0.1	1.7	2.3	0.6
Total dairy	**65.9**	**26.9**	**13.3**	**1.6**	**12.5**	**2.0**	**15.3**	**23.6**	**11.0**
Eggs	**2.6**	**5.0**	**1.1**	**4.2**	**3.4**	**0.2**	**1.3**	**5.5**	**7.7**
Legumes, nuts, & soy	**5.4**	**4.5**	**9.8**	**12.6**	**5.6**	**10.5**	**7.7**	**0.3**	**3.9**
Grain products	**7.9**	**28.5**	**36.0**	**33.1**	**24.1**	**27.5**	**12.4**	**2.9**	**63.0**
Citrus fruits	0.8	0.2	0.4	0.2	0.1	0.3	0.7	0	0.1
Noncitrus fruits	1.8	1.4	4.1	3.2	1.1	4.9	7.3	0.7	0.4
Total fruits	**2.6**	**1.6**	**4.5**	**3.4**	**1.2**	**5.2**	**8.0**	**0.7**	**0.5**
White potatoes	1.6	5.5	9.5	9.5	5.2	22.0	23.5	1.1	0.3
Dark-green, deep-yellow vegetables	1.3	0.8	1.3	1.7	0.7	2.4	2.3	0.7	0.2
Tomatoes	0.7	0.9	1.6	1.7	0.4	2.2	3.2	3.6	0.2
Other vegetables	5.2	3.3	5.7	5.4	2.8	3.7	7.4	5.0	0.6
Total vegetables	**8.8**	**10.5**	**18.1**	**18.3**	**9.1**	**30.3**	**36.4**	**10.4**	**1.3**
Butter	0.7	0.3	0.1	0.2	0.1	0.1	0.1	18.7	0.1
Margarine	0.1	0	0	0	0	0	0	1.4	0
Shortening	0	0	0	0	0	0	0	0	0
Lard, beef tallow	0	0	0	0	0.1	0	0	0	0
Salad, cooking oils	0	0	0	0	0	0	0	0	0
Total fats, oils	**0.8**	**0.3**	**0.1**	**0.2**	**0.2**	**0.1**	**0.1**	**20.1**	**0.1**
Sugars, sweeteners	**1.4**	**0.2**	**2.0**	**3.1**	**0.7**	**2.9**	**1.5**	**1.7**	**0.7**
Miscellaneous foods	**1.2**	**1.2**	**6.5**	**4.2**	**1.3**	**5.5**	**5.5**	**0.3**	**0.4**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

*See table notes.

Table 4a. U.S. food supply: Percentage of macronutrients contributed by major food groups, 1990-99*

Foods	Food energy	Carbohydrate	Dietary fiber	Protein	Total fat	Saturated fat	Mono-unsaturated fat	Poly-unsaturated fat	Cholesterol
Meat	9.7	0.1	0	22.2	17.8	21.3	20.4	7.3	26.4
Poultry	4.2	0	0	13.4	6.5	5.7	6.2	6.8	14.2
Fish	0.6	0	0	3.4	0.3	0.2	0.2	0.5	3.1
Total meat, poultry, & fish	**14.5**	**0.1**	**0**	**39.0**	**24.6**	**27.2**	**26.8**	**14.6**	**43.7**
Whole milk	1.6	1.0	0.1	3.0	2.0	3.9	1.4	0.4	3.2
Lowfat milks	2.1	1.8	0.2	5.3	1.4	2.8	1.0	0.2	2.2
Cheese	3.2	0.2	0	8.0	5.6	11.2	3.7	0.8	7.0
Other dairy	2.6	1.9	0.1	3.7	3.3	6.4	2.2	0.6	4.0
Total dairy	**9.5**	**4.9**	**0.3**	**20.0**	**12.3**	**24.3**	**8.3**	**2.0**	**16.4**
Eggs	**1.4**	**0.1**	**0**	**4.0**	**2.1**	**2.1**	**1.9**	**1.4**	**34.8**
Legumes, nuts, & soy	**3.1**	**2.1**	**14.3**	**6.3**	**3.8**	**2.1**	**4.0**	**5.6**	**0**
Grain products	**23.9**	**38.7**	**36.1**	**22.2**	**2.5**	**1.7**	**1.3**	**4.4**	**0**
Citrus fruits	1.0	1.8	2.3	0.5	0	0	0	0	0
Noncitrus fruits	2.3	4.4	9.5	0.8	0.5	0.1	0.5	0.5	0
Total fruits	**3.3**	**6.2**	**11.8**	**1.3**	**0.5**	**0.1**	**0.5**	**0.5**	**0**
White potatoes	2.5	4.5	7.6	2.3	0.1	0.1	0	0.2	0
Dark-green, deep-yellow vegetables	0.4	0.7	3.9	0.5	0.1	0	0	0.1	0
Tomatoes	0.6	1.1	4.2	0.7	0.1	0	0	0.2	0
Other vegetables	1.3	2.1	10.8	1.9	0.2	0.1	0.1	0.5	0
Total vegetables	**4.8**	**8.4**	**26.5**	**5.4**	**0.5**	**0.2**	**0.1**	**1.0**	**0**
Butter	1.1	0	0	0	2.8	5.5	1.9	0.5	3.0
Margarine	2.4	0	0	0.1	6.1	3.7	5.9	10.4	0
Shortening	6.6	0	0	0	17.6	15.3	26.0	9.6	0.8
Lard, beef tallow	1.2	0	0	0	3.1	4.5	3.3	1.1	1.3
Salad, cooking oils	8.8	0	0	0	23.2	12.3	19.2	48.1	0
Total fats, oils	**20.1**	**0**	**0**	**0.1**	**52.8**	**41.3**	**56.3**	**69.7**	**5.1**
Sugars, sweeteners	**18.6**	**38.3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Miscellaneous foods	**0.8**	**1.2**	**11.0**	**1.7**	**0.9**	**1.0**	**0.8**	**0.8**	**0**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

*See table notes.

Table 4b. U.S. food supply: Percentage of vitamins contributed by major food groups, 1990-99*

Foods	Vitamin A	Carotenes	Vitamin E	Vitamin C	Thiamin	Riboflavin	Niacin	Vitamin B_6	Folate	Vitamin B_{12}
Meat	16.0	0	2.0	0.9	15.2	11.6	16.5	20.7	3.5	60.1
Poultry	3.0	0	1.4	0.8	1.6	3.7	14.7	11.4	2.0	5.1
Fish	0.3	0	1.0	0.2	0.3	0.5	2.9	1.6	0.4	8.7
Total meat, poultry, & fish	**19.3**	**0**	**4.4**	**2.1**	**17.1**	**15.8**	**34.1**	**33.7**	**5.9**	**73.9**
Whole milk	1.9	0.4	0.6	0.9	1.0	5.3	0.3	1.6	1.2	4.3
Lowfat milks	1.6	0.3	0.5	1.3	1.8	9.2	0.4	2.8	2.1	7.6
Cheese	5.0	0.7	0.9	0	0.3	4.1	0.1	1.1	1.3	4.2
Other dairy	7.8	0.6	0.7	0.6	2.0	8.6	0.5	3.5	1.3	5.5
Total dairy	**16.3**	**2.0**	**2.7**	**2.8**	**5.1**	**27.2**	**1.3**	**9.0**	**5.9**	**21.6**
Eggs	**4.8**	**0**	**2.0**	**0**	**0.7**	**5.7**	**0.1**	**1.8**	**3.8**	**4.2**
Legumes, nuts, & soy	**0.1**	**0.1**	**5.6**	**0**	**4.3**	**1.5**	**3.9**	**3.6**	**16.1**	**0**
Grain products	**9.0**	**0.7**	**4.5**	**5.6**	**59.7**	**40.2**	**45.7**	**19.8**	**37.5**	**0.1**
Citrus fruits	0.7	1.1	0.9	26.3	1.9	0.5	0.6	1.5	6.8	0
Noncitrus fruits	2.5	5.5	2.7	14.7	1.7	1.8	1.5	8.3	2.7	0
Total fruits	**3.2**	**6.6**	**3.6**	**41.0**	**3.6**	**2.3**	**2.1**	**9.8**	**9.5**	**0**
White potatoes	0	0	0.4	15.3	4.3	1.0	5.3	10.8	3.4	0
Dark-green, deep-yellow vegetables	31.0	71.0	1.3	10.4	0.8	0.8	0.7	2.4	2.6	0
Tomatoes	2.4	3.5	3.8	8.4	1.2	1.0	1.8	2.8	2.2	0
Other vegetables	3.0	7.7	1.8	13.4	2.5	2.3	2.2	4.7	10.9	0
Total vegetables	**36.4**	**82.2**	**7.3**	**47.5**	**8.8**	**5.1**	**10.0**	**20.7**	**19.1**	**0**
Butter	2.8	0.6	0.5	0	0	0.1	0	0	0	0.1
Margarine	5.9	2.3	8.6	0	0	0.1	0	0	0	0.1
Shortening	0	0	19.9	0	0	0	0	0	0	0
Lard, beef tallow	0	0	0.6	0	0	0	0	0	0	0
Salad, cooking oils	0	0	39.8	0	0	0	0	0	0	0
Total fats, oils	**8.7**	**2.9**	**69.4**	**0**	**0**	**0.2**	**0**	**0**	**0**	**0.2**
Sugars, sweeteners	**0**	**0**	**0**	**0**	**0.1**	**0.7**	**0**	**0.2**	**0**	**0**
Miscellaneous foods	**2.2**	**5.5**	**0.5**	**1.0**	**0.6**	**1.3**	**2.8**	**1.4**	**2.2**	**0**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

*See table notes.

Table 4c. U.S. food supply: Percentage of minerals contributed by major food groups, 1990-99*

Foods	Calcium	Phosphorus	Magnesium	Iron	Zinc	Copper	Potassium	Sodium	Selenium
Meat	1.3	14.8	6.5	9.9	26.4	9.5	10.5	12.2	16.9
Poultry	0.9	7.1	4.1	3.6	7.7	2.3	4.2	3.8	7.7
Fish	0.9	2.3	1.6	1.4	2.1	1.6	1.3	2.6	4.7
Total meat, poultry, & fish	**3.1**	**24.2**	**12.2**	**14.9**	**36.2**	**13.4**	**16.0**	**18.6**	**29.2**
Whole milk	12.0	5.5	3.4	0.2	2.5	0.6	3.9	3.5	2.4
Lowfat milks	21.5	10.0	5.9	0.4	4.4	1.0	7.2	6.5	4.4
Cheese	23.1	9.7	2.3	0.8	6.4	0.5	0.9	14.0	3.1
Other dairy	16.3	8.3	5.1	0.4	3.3	0.6	6.9	7.5	2.4
Total dairy	**72.9**	**33.5**	**16.7**	**1.8**	**16.6**	**2.7**	**18.9**	**31.5**	**12.3**
Eggs	**1.7**	**3.6**	**0.9**	**2.1**	**2.4**	**0.2**	**1.1**	**3.1**	**6.4**
Legumes, nuts, & soy	**4.4**	**6.1**	**13.4**	**7.6**	**5.5**	**19.7**	**9.3**	**0.3**	**7.1**
Grain products	**4.9**	**19.1**	**23.0**	**53.6**	**27.9**	**22.6**	**9.0**	**0.8**	**39.6**
Citrus fruits	1.2	0.7	2.1	0.5	0.3	1.7	3.9	0.1	0.1
Noncitrus fruits	1.4	1.2	4.3	2.0	0.9	4.8	7.3	1.7	0.4
Total fruits	**2.6**	**1.9**	**6.4**	**2.5**	**1.2**	**6.5**	**11.2**	**1.8**	**0.5**
White potatoes	0.9	2.8	5.2	3.6	2.5	8.8	12.8	3.0	1.4
Dark-green, deep-yellow vegetables	1.1	0.8	1.5	1.0	0.6	1.2	2.4	1.0	0.2
Tomatoes	0.9	1.0	2.3	1.6	0.7	4.1	4.7	11.8	0.2
Other vegetables	3.6	2.9	5.0	3.6	2.5	4.5	6.5	11.9	0.7
Total vegetables	**6.5**	**7.5**	**14.0**	**9.8**	**6.3**	**18.6**	**26.4**	**27.7**	**2.5**
Butter	0.1	0.1	0	0	0	0	0	3.4	0
Margarine	0.4	0.2	0.1	0	0	0	0.1	8.6	0
Shortening	0	0	0	0	0	0	0	0	0
Lard, beef tallow	0	0	0	0	0	0	0	0	0
Salad, cooking oils	0	0	0	0	0	0	0	0	0
Total fats, oils	**0.5**	**0.3**	**0.1**	**0**	**0**	**0**	**0.1**	**12.0**	**0**
Sugars, sweeteners	**0.8**	**0.3**	**0.8**	**1.0**	**0.4**	**3.5**	**0.5**	**3.8**	**1.0**
Miscellaneous foods	**2.6**	**3.5**	**12.5**	**6.7**	**3.5**	**12.8**	**7.5**	**0.4**	**1.4**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

*See table notes.