

Older Americans Need To Make Every Calorie Count

Joanne F. Guthrie and Biing-Hwan Lin

As individuals age, their declining energy needs mean they must eat better while eating less. USDA food consumption survey data indicate that most older Americans are having trouble fitting the recommended number of daily food group servings into their decreased “calorie budgets.”

While the basic nutrition advice in the *Dietary Guidelines for Americans* and the Food Guide Pyramid applies to healthy adults of all ages, the elderly face some special challenges, particularly declining energy (calorie) needs as metabolism slows down. For some older adults, decreased physical activity may further reduce energy needs, although the *Dietary Guidelines* emphasize that healthy seniors, just like younger adults, should be physically active each day.

Because the amount of food they can eat while maintaining calorie balance is more limited than when they were younger, older individuals must choose wisely, selecting nutrient-dense foods and limiting “extras.” To help older adults and others visualize what this means, researchers at the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University created an “elderly pyramid” that is narrower than the Food Guide Pyramid for the general population (see box). The more narrow shape of the elderly pyra-



Congregate meal programs and mobile food services assist seniors and others whose physical limitations make it difficult to shop for or prepare nutritious meals.

Credit: Ken Hammond, USDA.

mid indicates that most individuals age 70 and older should choose the smaller numbers of servings within the range recommended by the Food Guide Pyramid.

A more quantitative way of providing food choice guidance would be to compute benchmark food densities for younger and older men and women. A benchmark food density is the number of servings per 1,000 calories an individual consuming a given number of calories would need to consume to meet the Food Guide Pyramid recommendations. For example, a person who consumes 2,200 calories daily should consume four servings of vegetables, according to the Food Guide Pyramid. This consumption level would translate into a bench-

mark density of 1.8 servings of vegetables per 1,000 calories.

Data from USDA's Continuing Survey of Food Intakes by Individuals, 1994-96 (CSFII 1994-96) were used to examine food intakes of younger men and women, age 19-59, and seniors, age 60 and older. Survey respondents lived in household settings, not in institutional settings, such as nursing homes. Data were collected from a nationwide sample, yielding results representative of the noninstitutionalized American population. The survey collected information on what, when, where, and how much individuals ate during the 3-year survey period. We used 1-day dietary intake data from this survey to examine how much younger and

Joanne F. Guthrie (202) 694-5373 jguthrie@ers.usda.gov
Biing-Hwan Lin (202) 694-5458 blin@ers.usda.gov

Guthrie is a nutritionist and Lin is an agricultural economist with the Food and Rural Economics Division, Economic Research Service, USDA.

older adults ate, to compute benchmark food densities for each age group, and to compare actual intakes of Food Guide Pyramid food groups with recommendations.

As expected, younger adults ate considerably more than their older counterparts. Men age 19-59 reported consuming an average of 2,535 calories per day, compared with 1,940 calories consumed by men age 60 and older. Women age 19-59 reported average intakes of 1,676 calories daily, compared with 1,413 calories per day for women age 60 and older. These figures represent calories from foods consumed, as reported by survey respondents. Previous studies indicate individuals often underreport food intakes, so these figures may be considered lower bound estimates of daily intake. However, the trend to decreased caloric intake with increasing age is clear.

The differences by age and gender in caloric intake indicate that food group benchmark densities would tend to be higher in women and in older adults. The benchmarks computed confirm this suggestion. Benchmark servings for the five food groups are lowest for young men and highest for older women, the group with the lowest calorie intake (table 1). These numbers show just how important it is that older individuals, particularly women, make every calorie count.

More Older Men Than Women Meet Food Guide Pyramid Recommendations

Comparisons of average food group intakes of older men and women with intakes of younger men and women indicate that older individuals eat fewer servings of

most food groups than their younger counterparts (table 2). Older men consume fewer servings of grains, vegetables, and meat and meat alternates than younger men, but their intakes fall within the ranges recommended by the Food Guide Pyramid. Older men actually consume more fruit than younger men and meet the minimum recommended number of servings, whereas younger men do not. Neither group meets recommendations for the milk, yogurt, and cheese group.

Younger women are less likely than men to consume recommended numbers of servings; older women are even less likely.

Younger women, on average, consume fewer than the minimum recommended number of servings of all of the five food groups except for vegetables. Mean food group intakes of older women are below recommended levels for all food groups. Like older men, older women consume more fruit than their younger counterparts, but their mean intake level of 1.8 servings per day still falls below the recommendation for at least 2 servings daily.

On a per-1,000-calories basis, intake of some but not all food groups is higher for older men and women than their younger counterparts, although not as high as our

Table 1—Benchmark Servings Are Higher for the Elderly

Food groups	Males		Females	
	Age 19-59	Age 60 and older	Age 19-59	Age 60 and older
<i>Servings/1,000 calories</i>				
Grains	3.9	4.3	4.6	5.1
Vegetables	1.8	2.0	2.2	2.5
Fruit	1.3	1.4	1.5	1.7
Milk, yogurt, and cheese	1.0	1.8	1.5	2.4
Meat and meat alternates (oz. or equivalent) ¹	2.7	3.2	3.6	4.1

¹Excludes cooked dry beans and peas, which are included in vegetables. Source: Calculated by USDA's Economic Research Service using data from the Continuing Survey of Food Intakes by Individuals, 1994-96.

Table 2—Intakes of All Food Groups Except Fruit Decline as People Age

Food groups	Males		Females	
	Age 19-59	Age 60 and older	Age 19-59	Age 60 and older
<i>Total servings</i>				
Grains	8.2	6.6	5.7	4.9
Vegetables	4.3	3.7	3.1	2.9
Fruit	1.4	2.0	1.4	1.8
Milk, yogurt, and cheese	1.6	1.3	1.2	1.0
Meat and meat alternates (oz. or equivalent) ¹	6.8	5.1	4.0	3.7

¹Excludes cooked dry beans and peas, which are included in vegetables. Source: Calculated by USDA's Economic Research Service using data from the Continuing Survey of Food Intakes by Individuals, 1994-96.

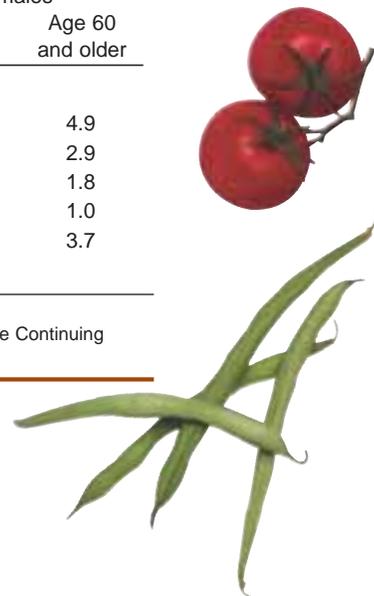




Table 3—Fewer Than One-Half of Older Men and Women Eat Recommended Numbers of Servings of any Food Group on a Given Day

Food groups	Males		Females	
	Age 19-59	Age 60 and older	Age 19-59	Age 60 and older
	<i>Percent meeting recommended servings</i>			
Grains	32	26	23	17
Vegetables	46	42	37	38
Fruit	14	29	19	32
Milk, yogurt, and cheese	26	6	15	3
Meat and meat alternates (oz. or equivalent) ¹	50	36	21	19

Note: These figures also represent the proportion of each population subgroup that meets benchmark food group densities.
¹Excludes cooked dry beans and peas, which are included in vegetables.
 Source: Calculated by USDA's Economic Research Service using data from the Continuing Survey of Food Intakes by Individuals, 1994-96.

benchmark densities. Older men have higher densities than younger men for grains; vegetables; milk, yogurt, and cheese; and, especially, fruit. Older women's diets have higher food group densities than diets of younger women for all food groups except milk, yogurt, and cheese; however, their diets are not sufficiently more dense to make up for older women's low energy in-

takes. For example, at 1.3 servings of fruit per 1,000 calories, older women's diets have the highest fruit density of any group studied. However, this density does not meet the benchmark density of 1.7 servings per 1,000 calories, and overall intake for older women is below recommended levels.

The figures cited above are averages. Within any group, dietary

quality varies, so it is also useful to examine the proportion of individuals within each group whose diets meet Food Guide Pyramid recommendations. As might be expected, on a given day, older individuals are less likely than their younger counterparts to consume recommended numbers of servings of most food groups. The difference was particularly dramatic for the milk, yogurt, and cheese group (table 3). Only 6 percent of older men consumed recommended numbers of servings from this group, compared with 26 percent of younger men. Even fewer older women—3 percent—met servings recommendations for the milk, cheese, and yogurt group, compared with 15 percent of younger women. Because this food group is the major source of calcium in most Americans' diets, these low intakes are a concern.

It should be pointed out that these figures represent only the proportion of individuals meeting servings recommendations on a single day. Were diets measured

Tufts University Researchers Propose an Elderly Pyramid

Using the widely recognized USDA Food Guide Pyramid as a starting point, three Tufts University researchers—Robert M. Russell, Helen Rasmussen, and Alice H. Lichtenstein—developed an “elderly pyramid” specifically geared to the dietary needs of consumers age 70 and older. This pyramid emphasizes the smaller energy needs of the elderly and the resulting need for nutrient-dense food choices. For example, the elderly pyramid recommends at least 6 servings of grains, rather than the 6-11 servings the Food Guide Pyramid recommends for the general population, emphasizing the minimum level as more consistent with

lower calorie intake of the elderly. Because the elderly need just as much fiber as younger adults, the modified pyramid adds “f+” fiber icons to indicate the elderly should choose more fiber-rich foods.

One difference between the elderly pyramid and the original pyramid is the addition of a visual recommendation for water. While water is necessary to people of all ages, thirst sensations act effectively to prevent dehydration in younger adults. Decreased thirst sensation is common with aging; an older individual can become somewhat dehydrated yet not be thirsty.

Another, more controversial, difference between the

two pyramids is the flag icon atop the elderly pyramid, which represents the possible need for dietary supplements. Absorption of calcium and vitamins D and B₁₂ decrease with age. However, there is no consensus as to whether all elderly people need to take supplements of these nutrients. The *Dietary Guidelines for Americans* suggest that older adults may need a vitamin D supplement and that they may wish to consult with their health care provider on whether they need to get vitamin B₁₂ from a supplement or from fortified foods. The guidelines recommend calcium supplements for those who seldom eat dairy prod-

ucts or other rich sources of calcium but do not provide specific advice for the elderly.

Although the researchers who developed the elderly pyramid are affiliated with the Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, the pyramid is not an official USDA teaching tool. Rather, Tufts researchers, according to the *Tufts Nutrition Communicator*, “are hoping that their pyramid will generate some discussion on how best to address the unique nutrient needs of seniors.”

over a longer period of time, more individuals in each group might be found to usually consume recommended numbers of servings. Because it is impractical to collect detailed dietary data for large numbers of days in national samples, we have historically had to rely on shorter term estimates. Statistical methods to estimate usual intakes are being developed and may lead to more precise estimates in the future. Despite these caveats, the differences between younger and older adults provide insights for nutrition monitoring of the elderly population.

Fruit consumption is a notable exception to the general decline in proportion of individuals meeting serving recommendations as they age. More than twice as many older men met the Food Guide Pyramid recommendations for fruit consumption than younger men—29 percent compared with 14 percent. With 32 percent of older women consuming at least 2 servings of fruit daily, they were the group most likely to meet the rec-

ommendation. Among younger women, 19 percent met the fruit recommendation. As individuals age, they may become more health conscious and actively increase consumption of healthful foods, such as fruit. Also, today's elderly may have grown up when fruit was more heavily consumed and are simply continuing habits developed over a lifetime.

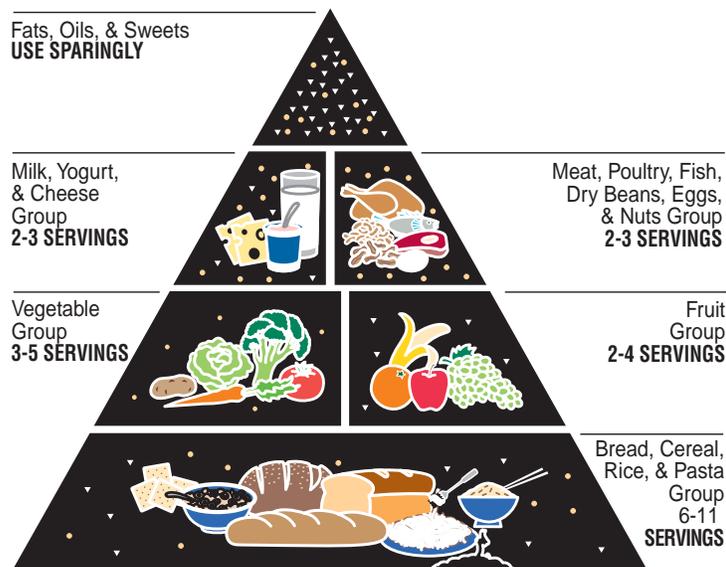
Lifestyle differences, such as frequency of eating out, might also explain the tendency of the elderly to consume more fruit. Restaurants, take-out establishments, and other away-from-home food sources play an increasingly large part in the diets of most Americans. Among adults age 19-59, 34 percent of calories were obtained from away-from-home sources in 1994-96. Unfortunately, individuals seem to be less likely to eat fruit when eating away from home: of the 1.5 servings of fruit consumed daily on average by Americans age 2 and older, 1.3 servings, or 85 percent of total servings, are obtained from the home food supply. Older men

and women obtain just 20 percent of calories from nonhome food sources and, like all Americans, eat less fruit when eating out. However, since older men and women eat out less, the lack of fruit consumed away from home has less impact on their diets.

Older Men More Likely Than Younger Men To Take Dietary Supplements

Older adults have been reported to be more likely to take vitamin and/or mineral supplements than younger individuals. The *Dietary Guidelines for Americans* stress the importance of wise food choices as the basis of good nutrition; therefore, supplement intake would not be considered an alternative to consuming more nutrient-dense foods. Some older adults, however, may benefit from selected supplements, such as vitamins D and B₁₂. The *Dietary Guidelines* also state that individuals who seldom eat dairy products or other rich sources of calcium could benefit from a calcium supplement.

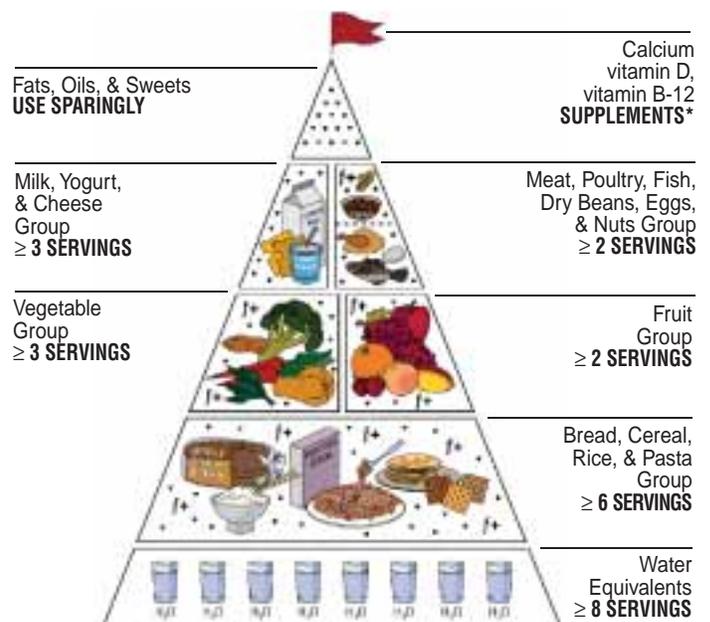
Original Food Guide Pyramid



• Fat (naturally occurring and added)
r Sugars (added)
These symbols show fat and added sugars in foods.

Source: U.S. Department of Agriculture/U.S. Department of Health and Human Services

Modified Food Guide Pyramid for 70+ Adults

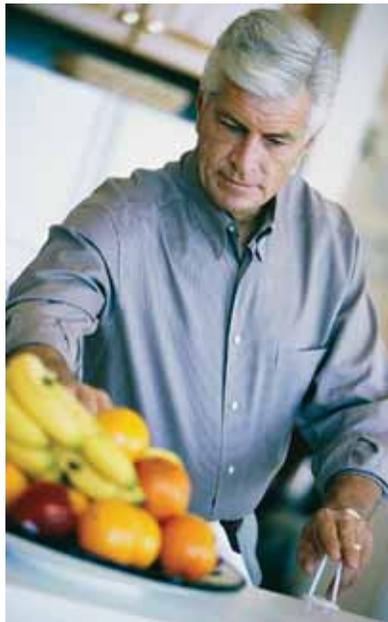


• Fat (naturally occurring and added) © copyright 1999 Tufts University
▼ Sugars (added)
f+Fiber (should be present)

These symbols show fat and added sugars in foods.
* Not all individuals need supplements, consult your health care provider.

Compared with younger age groups, the elderly are much less likely to consume recommended servings of milk and other dairy products, major sources of calcium in the diets of most Americans. The elderly however, do not need to be reminded to include fruit in their diets. Older men and women tend to eat more fruit than younger adults.

Credit: Ken Hammond, USDA.



Credit: Eyewire.

As part of the CSFII interview, individuals were asked if they took vitamin or mineral supplements. More older men than younger men reported taking supplements—47 percent compared with 40 percent (fig. 1). Fifty-five percent of women reported taking supplements, but there was no difference by age. The CSFII 1994-96 collected limited amounts of information about the content of the vitamin-mineral supplements taken by individuals. Most individuals reported taking a multivitamin or a multivitamin-mineral product but provided little

or no specific information about the nutrients contained in such products. A small number of individuals reported taking specific supplements, such as calcium or the vitamins recommended by the *Dietary Guidelines*. Without more information on the content of the vitamin-mineral supplements taken by individuals, it is difficult to assess the extent to which older individuals chose supplements containing the nutrients emphasized by the *Dietary Guidelines*.

Illness and Low Income May Add Further Nutrition Challenges

As an individual's calorie needs decline, meeting Food Guide Pyramid recommendations becomes increasingly difficult, particularly for older women, who generally have lower energy needs and intakes than older men. Many of the elderly also face other nutritional challenges. Many older individuals suffer from chronic health conditions that may complicate nutrition needs and may require dietary modifications. In a previous analysis of CSFII 1994-96 data, we found that almost half of all older Americans reported suffering from high blood pressure. Substantial numbers of the elderly also reported suffering from diabetes, high

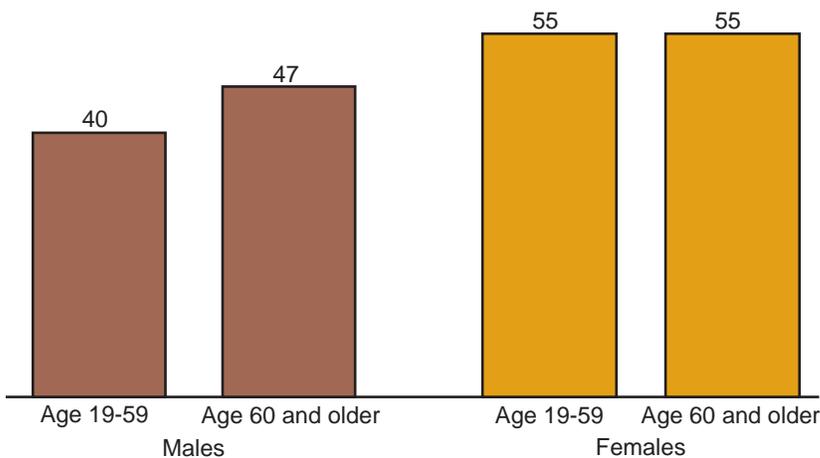
blood cholesterol, and cardiovascular disease. Despite this high prevalence of nutrition-related chronic conditions, only about one-quarter of the elderly reported following a special diet. Why more elderly are not changing their diets to combat these health conditions is not known. In 2002, the Medicare system began to reimburse nutrition counseling services provided by qualified nutrition professionals to older individuals with diabetes and renal disease. The extent to which such services improve diets of older individuals with these conditions could have important implications for design of nutrition and health services for the elderly.

For many elderly, especially the "oldest old," physical limitations may impair the ability to shop for and prepare nutritious meals (see "America's Older Population" elsewhere in this issue). Programs that deliver groceries to seniors or bring "mobile markets" to senior housing complexes can ease the difficulties in acquiring foods. Congregate and home-delivered meal programs may help those individuals who also have difficulty with food preparation. National meal programs for the elderly are administered by the Administration on Aging of the U.S. Department of Health and Human Services. USDA provides cash allocations and/or commodity foods for these programs through the Nutrition Services Incentive Program. USDA also supports provision of healthful meals and snacks to participants in adult day care programs through the Child & Adult Care Food Program (CACFP). The adult portion of CACFP, although currently much smaller than the child care segment, is growing rapidly. The number of participating adult day care facilities increased from 1,222 in 1993 to 2,128 in 2001.

Low-income elderly also may face more difficulty in maintaining a nutritious diet. In a previous study, we found that low-income elderly consumed fewer servings of

Figure 1—Older Men Are More Likely To Take Dietary Supplements Than Younger Men

Percent taking dietary supplements



Source: Continuing Survey of Food Intakes by Individuals, 1994-96.

Food Guide Pyramid food groups than higher income elderly. Income limitations, however, might not be the only reason for these difficulties. The low-income segment of the elderly tend to be older, less educated, and more likely to live alone than other elderly—all factors that are also associated with lower diet quality. Despite the need for a nutritious diet, low-income elderly are less likely to participate in USDA's Food Stamp Program than other eligible groups. USDA is making special efforts to reach out to eligible older individuals through Food Stamp Program modifications that

may increase the program's appeal for low-income elderly (see "Food Stamp Participation by Eligible Older Americans Remains Low" elsewhere in this issue).

As baby boomers age, the elderly will constitute the largest share of the American population in the Nation's history. These "elderly boomers" may differ in some ways from the elderly of today. For example, they may continue the habit of eating out more frequently, or they may continue to eat less fruit than today's elderly. They will, however, face the same physiological changes as the elderly of today and

the same need to make better food choices within increasingly constrained calorie budgets. Their success in making every calorie count should have important implications for their own quality of life. It will also be important to our society, as we are faced with meeting the health and support needs of this large group of older Americans.

References

- Guthrie, J.F., and B-H Lin. "An Overview of the Diets of Lower- and Higher-Income Elderly and Their Food Assistance Options," *Journal of Nutrition Education and Behavior*, Vol. 34, Supp. 1, 2002, pp 531-41.
- Russell, R.M., H. Rasmussen, and A.H. Lichtenstein. "Modified Food Guide Pyramid for People Over Seventy Years of Age," *Journal of Nutrition*, Vol. 129, 1999, pp. 751-53.
- Squires, S. "Medicare Widens Funding for Diet Help," *Washington Post*, January 29, 2002, pp. HE01.
- U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Nutrition and Your Health: Dietary Guidelines for Americans*, 5th Edition, Home and Garden Bulletin No. 232. U.S. Department of Agriculture, 2000. **FR**