# NUTRITIVE CONTENT OF HOMEMAKERS' MEALS

## Four Cities, Winter 1948

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**By Faith Clark**
**and Lillian J. Fincher**

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# Foreword

This bulletin presents the results of a study of the nutritive content of the diets of approximately 1,000 homemakers based on reports of their meals for a 24-hour period. The data for this study were obtained by the Family Economics Division of the Bureau of Human Nutrition and Home Economics, now included in the Home Economics Research Branch, Agricultural Research Service. The data were obtained in the winter of 1948 in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., as a supplementary part of the surveys of family food consumption. Results of the family surveys have been issued in a series of processed reports, many of which are available upon request from the Home Economics Research Branch, Agricultural Research Service, U. S. Department of Agriculture.

The surveys on which the data in this report are based were planned and conducted under the direction of Margaret G. Reid and Sadye F. Adelson. The samples of dwelling units to be visited were drawn by Evelyn Grossman. Ennis C. Blake assisted throughout in supervising the collection, editing, and tabulation of the data. Gertrude S. Weiss has had general supervision of analysis of the survey data. Esther F. Phipard prepared the final draft of the section on Nutritive Adequacy of Diets.

HAZEL K. STIEBELING, *Director*,
*Human Nutrition and Home Economics Research*,
*Agricultural Research Service.*

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# OBJECTIVES AND SCOPE

Surveys of food consumed by various groups in the population give a broad, over-all picture of the nutritive content of family diets, but reveal little about the diets of individual family members. Diet surveys of individuals, on the other hand, have seldom covered representative samples of important segments of the population. To provide more information about the diets of such a sample of individuals, data on the food consumed by homemakers were obtained as a supplementary part of the family surveys made in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., in the winter of 1948. This publication presents findings on the diets of approximately 1,000 homemakers who furnished estimates of the quantities of foods they ate during the 24-hour period preceding the time they were interviewed. Since information was obtained for each meal and for food eaten between meals, whether eaten at home or away, this study shows the distribution of nutrients both among the meals of the day and between food eaten at home and away from home.

The homemaker was chosen for special attention for several reasons. Because she is usually the person interviewed in a family-food-consumption study, she is available to furnish information on her own consumption without the necessity of a return visit by the interviewer (as might be the case if information on the husband's food were to be obtained). She can furnish better information about the food she herself ate than she could furnish for other members of the family, particularly about food eaten between meals or away from home, and she is usually able to give more exact quantities of food in terms of household units than are other family members. It also seemed desirable to choose an adult member for the four-city surveys inasmuch as a study of school children was being undertaken by the Bureau of Human Nutrition and Home Economics* at the same time (*21*).[1] Lastly, several investigators have reported that the homemaker may have the poorest diet in the family.[2]

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*Now Human Nutrition Research Branch and Home Economics Research Branch, Agricultural Research Service.

[1] Italic numbers in parentheses refer to Literature Cited, p. 27.

[2] Since data were available on the food consumed by the families of which the homemakers were members, it was expected that some comparison of the homemakers' food could be made with corresponding averages for all household members. However, such comparisons, particularly in terms of items of food, are limited by basic differences in the two types of data obtained. One important difference arises from the different terms in which the foods were recorded. Household foods were recorded in terms of kinds and quantities as purchased (or as they came into the kitchen) and the homemakers' foods in kinds and quantities as eaten (served on table), and only some of the foods reported in edible portions by the homemakers were converted to quantities as purchased.

Another important difference that affects estimates of nutrients as well as quantities of foods stems from the problem of obtaining reliable information on food discarded by the household. Although information on quantities of food brought into the household but not actually consumed was requested for the 7-day household estimate, indications are that such reporting was not complete. Hence the estimates of household food quantities and nutrients are essentially a measure of food "available for consumption," whereas the homemakers' reports closely represent actual intake. Because of the many difficulties involved in comparing averages for the household and for the homemaker, discussion on this point is included in the Methodology, pp. 61–64.

The families of which the homemakers were members were selected by probability-sampling methods to represent all housekeeping families of 2 or more persons in each of the 4 cities. The homemaker was defined as a woman related to the family head and responsible for the planning of meals and buying of food for the household of which she was a member. Acceptable reports were obtained from 1,037 homemakers from a total of 1,066 cooperating families. In addition to the detailed information requested of each homemaker on the kinds and quantities of food eaten, information was obtained on her age, height, weight, degree of physical activity, years of schooling, and employment status and on the size and composition of the household and annual income of the family.

Methods and procedures followed in making the study are found in the Methodology, pp. 54–64.

## THE AVERAGE HOMEMAKER

The average homemaker included in the surveys in these 4 cities may be described as a woman 42 years old, weighing 141 pounds, and 5 feet 4 inches tall (table 1). Although it is not possible to describe precisely her physical activity, she may be said to be midway between sedentary and moderately active. Half of the women were classed as sedentary, 3 percent as very active, and most of the remainder as moderately active. A few of the women (3 percent) were separately classified as pregnant or as nursing mothers. As to education, the largest share had either some high school attendance or no more than elementary schooling. Only a fifth had one or more years of college. About five-sixths were homemakers without outside employment.

The average homemaker in this study used a little over a cup a day of milk or its equivalent in cream, ice cream, and cheese, in addition to some included in other foods. She averaged about two-thirds of an egg a day plus unknown but probably small amounts that were not reported separately because they were included in food mixtures. She consumed about 6½ ounces of meat, poultry, or fish in a day, one very small potato, and a little over three-quarters of a pound of all other kinds of vegetables and fruit. Food quantities are difficult to summarize from menus, however, because it is time consuming to estimate the quantities of foods such as milk and eggs that are included in the many mixed dishes. Also totals of quantities of the same type of food in different form (such as meat with bone and boneless meat) are difficult to interpret. Hence in this report, relatively little detail is presented on the quantities of foods consumed. Emphasis is primarily on the nutritive content of the food since the quantity of each nutrient can be summarized with reasonable accuracy.

The average number of calories in the food reported consumed in 1 day was 1,780. Amounts of protein and other nutrients were as follows: Protein, 64 gm.; calcium, 0.6 gm.; iron, 12 mg.; vitamin A value, 7,500 I. U.; thiamine, 1.0 mg.; riboflavin, 1.3 mg.; niacin, 12

mg.; and ascorbic acid, 66 mg. For the last four vitamins, estimated losses occurring during cooking have been deducted.

There were some differences from city to city in these average values, but on the whole, the averages were similar. Differences in the nutritive content of the diets of the women living in the four cities are discussed later with emphasis on the sources of some of the nutrients (pp. 15–17).

TABLE 1.—*Description of homemakers in surveys in 4 cities and average nutritive content of their food for 1 day*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Description of homemakers | Birmingham | Buffalo | Minneapolis-St. Paul | San Francisco | Total |
|---|---|---|---|---|---|
| All homemakers studied number | 261 | 254 | 245 | 277 | 1,037 |
| Age, average years | 42 | 40 | 43 | 42 | 42 |
| Weight, average pounds | 140 | 143 | 141 | 138 | 141 |
| Height, average inches | 64 | 64 | 64 | 64 | 64 |
| Activity class: | | | | | |
| Moderately active percent | 50 | 63 | 47 | 22 | 45 |
| Sedentary do | 47 | 31 | 43 | 75 | 49 |
| Very active do | (1) | 4 | 4 | 1 | 3 |
| Resting do | 1 | (1) | 1 | 0 | (1) |
| Pregnant [2] do | 1 | 1 | 3 | 2 | 2 |
| Lactating do | 1 | 1 | 2 | 0 | 1 |
| Maximum years of schooling: | | | | | |
| Elementary school, 8 years or less percent | 45 | 41 | 27 | 26 | 35 |
| High school, 1 to 4 years percent | 39 | 49 | 48 | 51 | 47 |
| College, 1 year or more percent | 16 | 10 | 25 | 23 | 18 |
| Employed away from home percent | 12 | 12 | 16 | 25 | 16 |
| Nutritive content of food for 1 day, averages per homemaker: | | | | | |
| Food energy calories | 1,820 | 1,730 | 1,720 | 1,850 | 1,780 |
| Protein grams | 57 | 67 | 61 | 69 | 64 |
| Calcium do | .61 | .54 | .58 | .60 | .58 |
| Iron milligrams | 11.9 | 11.7 | 10.5 | 12.5 | 11.7 |
| Vitamin A value International Units | 8,570 | 6,380 | 6,340 | 8,690 | 7,540 |
| Thiamine [3] milligrams | 1.02 | .99 | .94 | .98 | .98 |
| Riboflavin [3] do | 1.37 | 1.35 | 1.29 | 1.36 | 1.34 |
| Niacin [3] do | 10.9 | 12.8 | 11.4 | 13.3 | 12.1 |
| Ascorbic acid [3] do | 64 | 62 | 66 | 81 | 66 |

[1] 0.5 percent or less.
[2] Latter half of pregnancy.
[3] Adjusted for nutrient losses in preparation and cooking of food.

# NUTRITIVE ADEQUACY OF DIETS

In this section, estimates of the calorie value of the homemakers' diets and their content of protein, 2 minerals, and 5 vitamins are discussed in relation to the Recommended Dietary Allowances of the National Research Council (*5*).[3] These allowances are useful as a point of reference with which to compare estimates of the nutritive content of groups of diets. Because needs vary widely from person to person and the Recommended Dietary Allowances include a "margin of safety" above the usual concept of "requirement," they must be used with caution as a yardstick for measuring the intake of individuals, especially for 1 day.

Data on average nutrient content of groups of diets and on their distribution by several levels of each nutrient show where these homemakers as a group stood with respect to recommendations, and indicate where dietary improvement might be made.

## Calories

The average food-energy value of the homemakers' food for 1 day was approximately 1,800 calories, about 35 percent above the basal energy requirements (as estimated by the authors) for a woman corresponding to the average height and age of the group. About a third of the diets provided fewer than 1,500 calories; a third, between 1,500 and 2,000 calories; and the others, more than 2,000 calories (table 2). These values are low compared with the 1948 recommended allowances which suggest 2,000 calories for sedentary women, 2,400 for moderately active, and 3,000 for very active women. This apparent discrepancy between recommendations and practices raises several questions about the interpretation of food consumption data in relation to recommendations for food intake. Other investigators also have found calorie values as low as these, using the method of this study and other methods (table 3). (A fuller discussion of some methodological problems is found in the Methodology, pp. 56–64.)

The method of recalling quantities and kinds of foods eaten in a previous period is always subject to error. It is difficult to estimate the weight, volume, or dimensions of foods even when looking at them; it is even harder to try to recall accurately the quantities eaten. It is not likely, however, that all errors will be underestimates. The possibility of omissions must also be considered. It is a question whether the spoonful to taste, the scraping of the bowl, the last bit "too good to throw out, too little to put away" is always remembered by the homemaker.

The period covered, 1 day, may account for some of the wide variability among homemakers, but not for the low average values. The similarity to averages obtained in investigations that covered several days suggests that extending the period for more than 1 day would probably not have changed the calorie averages (table 3). The variability likely with 1-day records has, however, been taken into account in the interpretation of the distributions.

[3] As this bulletin goes to press, a revision of the National Research Council's recommended dietary allowances is under consideration.

TABLE 2.—*Percent of homemakers in 4 cities with food for 1 day furnishing specified amounts of food energy and 8 nutrients*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Nutrient | Birmingham (261 homemakers) | Buffalo (254 homemakers) | Minneapolis-St. Paul (245 homemakers) | San Francisco (277 homemakers) | Total (1,037 homemakers) |
|---|---|---|---|---|---|
| Food energy (calories): | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Under 1,000 | 10 | 14 | 12 | 7 | 10 |
| 1,000–1,499 | 21 | 24 | 25 | 25 | 24 |
| 1,500–1,999 | 34 | 30 | 38 | 33 | 34 |
| 2,000–2,499 | 20 | 20 | 15 | 22 | 19 |
| 2,500–2,999 | 10 | 9 | 5 | 6 | 7 |
| 3,000–3,499 | 3 | 2 | 4 | 5 | 4 |
| 3,500 and over | 2 | 1 | 1 | 2 | 2 |
| Protein (grams): | | | | | |
| Under 30 | 13 | 4 | 6 | 6 | 7 |
| 30–39 | 13 | 14 | 12 | 9 | 12 |
| 40–49 | 16 | 10 | 19 | 13 | 14 |
| 50–59 | 18 | 15 | 18 | 13 | 16 |
| 60–69 | 10 | 19 | 16 | 16 | 15 |
| 70–79 | 12 | 11 | 11 | 15 | 12 |
| 80 and over | 18 | 27 | 18 | 28 | 24 |
| Calcium (grams): | | | | | |
| Under 0.20 | 11 | 8 | 7 | 9 | 9 |
| 0.20–0.29 | 13 | 18 | 14 | 12 | 14 |
| .30– .39 | 12 | 15 | 16 | 16 | 15 |
| .40– .66 | 27 | 32 | 32 | 26 | 30 |
| .67– .79 | 13 | 9 | 10 | 9 | 10 |
| .80– .99 | 10 | 10 | 9 | 12 | 10 |
| 1.00 and over | 14 | 8 | 12 | 16 | 12 |
| Iron (milligrams): | | | | | |
| Under 6.0 | 13 | 13 | 13 | 10 | 12 |
| 6.0–7.9 | 13 | 15 | 18 | 13 | 15 |
| 8.0–11.9 | 35 | 28 | 39 | 32 | 33 |
| 12.0–15.9 | 22 | 26 | 20 | 20 | 22 |
| 16.0 and over | 17 | 18 | 10 | 25 | 18 |
| Vitamin A value (International Units): | | | | | |
| Under 1,500 | 22 | 22 | 11 | 9 | 16 |
| 1,500–2,999 | 21 | 26 | 32 | 20 | 24 |
| 3,000–4,999 | 15 | 19 | 26 | 23 | 21 |
| 5,000–9,999 | 12 | 13 | 14 | 19 | 15 |
| 10,000 and over | 30 | 20 | 17 | 29 | 24 |
| Thiamine (milligrams): [1] | | | | | |
| Under 0.60 | 12 | 18 | 19 | 12 | 15 |
| 0.60–0.79 | 16 | 17 | 18 | 16 | 17 |
| .80– .99 | 15 | 16 | 21 | 20 | 18 |
| 1.00–1.19 | 13 | 12 | 11 | 14 | 12 |
| 1.20–1.39 | 13 | 6 | 9 | 10 | 10 |
| 1.40–1.59 | 9 | 7 | 4 | 7 | 7 |
| 1.60–1.99 | 12 | 9 | 7 | 8 | 9 |
| 2.00 and over | 10 | 15 | 11 | 13 | 12 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 2.—*Percent of homemakers in 4 cities with food for 1 day furnishing specified amounts of food energy and 8 nutrients*—Con.

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Nutrient | Birmingham (261 homemakers) | Buffalo (254 homemakers) | Minneapolis-St. Paul (245 homemakers) | San Francisco (277 homemakers) | Total (1,037 homemakers) |
|---|---|---|---|---|---|
| Riboflavin (milligrams): [1] | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Under 0.60 | 8 | 8 | 9 | 8 | 8 |
| 0.60–0.89 | 18 | 22 | 16 | 16 | 18 |
| .90–1.19 | 23 | 16 | 29 | 20 | 22 |
| 1.20–1.49 | 18 | 21 | 18 | 19 | 19 |
| 1.50–1.79 | 13 | 14 | 11 | 13 | 13 |
| 1.80–2.29 | 11 | 11 | 7 | 12 | 10 |
| 2.30 and over | 9 | 8 | 10 | 12 | 10 |
| Niacin (milligrams): [1] | | | | | |
| Under 6.0 | 18 | 11 | 12 | 10 | 13 |
| 6.0–7.9 | 12 | 9 | 11 | 8 | 10 |
| 8.0–9.9 | 16 | 14 | 17 | 11 | 14 |
| 10.0–11.9 | 17 | 14 | 18 | 14 | 15 |
| 12.0–13.9 | 8 | 10 | 11 | 13 | 10 |
| 14.0–15.9 | 9 | 10 | 10 | 11 | 10 |
| 16.0–19.9 | 9 | 15 | 9 | 13 | 12 |
| 20.0 and over | 11 | 17 | 12 | 20 | 16 |
| Ascorbic acid (milligrams): [1] | | | | | |
| Under 10 | 15 | 10 | 6 | 4 | 9 |
| 10–29 | 18 | 16 | 17 | 14 | 16 |
| 30–49 | 18 | 16 | 15 | 16 | 16 |
| 50–69 | 7 | 12 | 12 | 10 | 10 |
| 70–89 | 8 | 6 | 11 | 9 | 9 |
| 90–109 | 5 | 9 | 16 | 10 | 10 |
| 110–129 | 8 | 11 | 7 | 8 | 8 |
| 130 and over | 21 | 20 | 16 | 29 | 22 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 3.—*Average number of calories per day reported in selected studies of food intake of women in the United States*

| Author and date of publication | Number of women | Age range | Length of study | Method | Calories per day |
|---|---|---|---|---|---|
| | | *Years* | *Days* | | |
| Youmans and others, 1943 (*25*) | 229 | 21 and over | 3 | Record (measured), calculated | 1, 736 |
| Winters and Leslie, 1943 (*23*) | 24 | Adult women | 7–21 | Record (estimated), analyzed | 1, 145 |
| Winters and Leslie, 1944 (*24*): | | | | | |
| Young married women | 12 | 32–37 | 7–21 | do | 1, 667 |
| Faculty members | 4 | [Adults] | 7–21 | do | 1, 720 |
| Ohlson and others, 1948 (*7*): | | | | | |
| Selected white women | 17 | 52–74 | 7–10 | Record (weighed), calculated | 1, 854 |
| Ohlson and others, 1948 (*8*): | | | | | |
| White, good health; Iowa | 54 | 40–69 | 1 | Recall, calculated | 1, 658 |
| Negro, good health; Michigan | 6 | 43–60 | 7 | Record (estimated), calculated | 1, 789 |
| Dean, 1950 (*4*): | | | | | |
| Spring | 28 | 20–40 | 7 | do | 1, 676 |
| Fall | 30 | 20–40 | 7 | do | 1, 809 |
| Ohlson and others, 1950 (*9*): | | | | | |
| Recall method | 13 | 51–77 | 3 | Recall, calculated | 1, 906 |
| Weighed record method | 13 | 51–77 | 10 | Record (weighed), analyzed | 1, 708 |
| Young and others, 1950 (*26*): | | | | | |
| 7 age ranges | 24 | 16–20 | 1 | Record (estimated), calculated | 1, 976 |
| | 54 | 21–29 | 1 | do | 2, 066 |
| | 80 | 30–39 | 1 | do | 2, 047 |
| | 41 | 40–49 | 1 | do | 1, 982 |
| | 34 | 50–59 | 1 | do | 1, 843 |
| | 23 | 60–69 | 1 | do | 1, 982 |
| | 11 | 70 and over | 1 | do | 1, 614 |
| Swanson and others, 1952 (*12*): Iowa | 1, 072 | 30 and over | 1 | Recall, calculated | 1, 700 |
| Clark and Fincher, 1953 (study reported in this publication): | | | | | |
| Birmingham, Ala | 261 | Adult women | 1 | do | 1, 820 |
| Buffalo, N. Y | 254 | do | 1 | do | 1, 730 |
| Minneapolis-St. Paul, Minn | 245 | do | 1 | do | 1, 720 |
| San Francisco, Calif | 277 | do | 1 | do | 1, 850 |

## Calories in Relation to Activity, Weight, Height, and Age

The adequacy of the diets with respect to calories should be considered in relation to physical activity, body size (height as well as weight), and age. Because these factors are interrelated, they need to be considered together.

In this study the classification of homemakers by degree of physical activity was only approximate since it was based on the interviewer's interpretation of the information given by the homemaker about her activity. Moreover, it applied to the 7 days of the family food survey while the reporting of her diet was for 1 day.

When grouped by activity only, there seemed to be little relation between the average calorie value of the homemakers' diets and their reported physical activity. Women classified as moderately active during the week preceding the interview reported food of approximately the same average calorie value as women classed as sedentary (1,770 and 1,780 calories respectively, table 4). Those women that were classified as very active (26 out of 1,037) had food estimated to contain slightly more calories (1,830 per homemaker). Average weights of moderately active and sedentary women were approximately the same—about 140 pounds, while the very active women weighed 149 pounds on the average.

Only 17 of the 1,037 women were in the latter half of pregnancy. These reported food estimated at 2,010 calories, somewhat more than the other women. The few women who reported that they were nursing infants, 10 out of 1,037, had food valued at 1,980 calories a day.

Age appears to be more closely related to calorie intake than does the degree of physical activity as here used. However, it is difficult to separate the real influence of physical activity from that of age. It is probable that the younger women were more active than older women in the same activity class. In any case, diets of younger women provided more calories than did diets of older women. In the two height groups for which data are shown separately (table 5), average calories in the diets of those 40 years and over were lower than those in the diets of homemakers under 40 years of age. Averages for each age decade beyond the 30's were lower than the groups

TABLE 4.—*Physical activity and weight of homemakers and average number of calories in food for 1 day, 4 cities combined*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Physical activity of homemaker | Homemakers | Average weight | Food energy |
|---|---|---|---|
| | *Number* | *Pounds* | *Calories* |
| All activities | 1,037 | 141 | 1,780 |
| Moderately active | 463 | 142 | 1,770 |
| Very active | 26 | 149 | 1,830 |
| Sedentary | 516 | 140 | 1,780 |
| Resting | 5 | 143 | 1,360 |
| Pregnant [1] | 17 | 138 | 2,010 |
| Lactating | 10 | 133 | 1,980 |

[1] Latter half of pregnancy.

immediately preceding. An exception was the taller group of women 60 years and over. The average number of calories in their food was more than in that of those aged 40 to 50 years or 50 to 60 years.

Common observation that older women are heavier than younger women is supported by the reports of these homemakers. For example, in the group of women 5 feet 4 inches or shorter, the average weight of those under 40 years of age was 129 pounds; of those 40 years or over, 140 pounds. This difference is demonstrated more vividly by distribution of the homemakers by weight (table 6). These indicate that of the shorter women, for example, 23 percent of those 40 years and over weighed more than 160 pounds while only 11 percent of those under 40 years of age weighed that much.

TABLE 5.—*Average number of calories in food for 1 day and weight of homemakers classified by age, in 2 height groups, women classified as sedentary or moderately active, 4 cities combined*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., San Francisco, Calif., winter 1948]

| Age (years) | 5 feet 4 inches and under | | | Over 5 feet 4 inches | | |
|---|---|---|---|---|---|---|
| | Number | Weight | Food energy | Number | Weight | Food energy |
| | | *Pounds* | *Calories* | | *Pounds* | *Calories* |
| Under 40 | 264 | 129 | 1, 900 | 188 | 137 | 1, 870 |
| Under 30 | 118 | 123 | 1, 840 | 82 | 131 | 1, 870 |
| 30–39 | 146 | 133 | 1, 940 | 106 | 142 | 1, 870 |
| 40 and over | 284 | 140 | 1, 650 | 235 | 154 | 1, 760 |
| 40–49 | 131 | 138 | 1, 710 | 104 | 152 | 1, 780 |
| 50–59 | 88 | 143 | 1, 670 | 89 | 158 | 1, 710 |
| 60 and over | 65 | 141 | 1, 510 | 42 | 151 | 1, 810 |

TABLE 6.—*Distribution of homemakers by body weight, 2 height and age groups, women classified as sedentary or moderately active, 4 cities combined*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Weight (pounds) | 5 feet 4 inches and under | | Over 5 feet 4 inches | |
|---|---|---|---|---|
| | Under 40 years | 40 years and over | Under 40 years | 40 years and over |
| | *Percent* | *Percent* | *Percent* | *Percent* |
| Under 100 | 3 | 2 | 0 | 0 |
| 100–119 | 33 | 16 | 13 | 5 |
| 120–139 | 35 | 29 | 44 | 20 |
| 140–159 | 18 | 30 | 28 | 34 |
| 160–179 | 8 | 16 | 10 | 23 |
| 180 and over | 3 | 7 | 15 | 18 |

With so many women obviously overweight for their heights, it was logical to inquire next about the relationship between body weights and calories. Accordingly, the homemakers were classified by their weights, and the average number of calories was then computed for each of the weight-height groups (table 7). In none of the activity-height-age groups did the heavier homemakers consistently consume more calories during the 1 day of the survey than did those who weighed less, in spite of the fact that it takes more calories to maintain excess weight than it does to maintain less weight. Perhaps the heavier women were less active. Perhaps, also, the results would be different if diets of the same women could be studied over a period of time.

In this analysis of factors affecting consumption, age is the one which seemed to show the clearest relationship to calories in the diet. The older women ate less, as measured by calorie value of their food, but they weighed more than the younger women. The activity classification used in this study did not show any difference in calories between those called "moderately active" and "sedentary," although the few women considered very active and those who were pregnant or nursing did have diets slightly higher in calories than the average. The data on average weight for height and age lead to the conclusion that the food-energy needs of most of the homemakers were being met despite the apparently low levels of calories as compared with recommendations. It appears that there is real need for further research on the food-energy requirements of women of all ages under conditions of present-day life. Since the greater discrepancy between the calorie value of the day's food and the recommended allowance was for older women, research is especially needed on their requirements.

## Protein

Protein is generally well provided in family food supplies (*14*). In the homemakers' diets the average quantity of protein was 64 gm. Among the 4 cities, only in Birmingham was the average (57 gm.) for the women less than the 60 gm. suggested by the National Research Council for normal women (except during pregnancy and lactation).

Individual 1-day diets showed wide variation in protein content, with about a fifth having less than 40 gm. and a fourth over 80 gm. (see table 2, pp. 5 and 6). Without knowing more about the day-by-day variation in the food consumption of these women, conclusions based on distributions of 1-day diets are of limited value. The data for 1 day suggest, however, that many of the diets may have been low or borderline in protein.

## Calcium

Calcium was the nutrient in which the average content of the homemakers' food was lowest compared with recommended allowances. The average amount for all the women, 0.6 gm., is borderline with respect to minimal needs as indicated by many calcium balance studies and does not allow for a margin of safety for those individuals

TABLE 7.—*Average number of calories in food for 1 day, moderately active and sedentary homemakers in 2 height and age groups, classified by weight, 4 cities combined*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Weight (pounds) | Moderately active | | | | Sedentary | | | |
|---|---|---|---|---|---|---|---|---|
| | 5 feet 4 inches and under | | Over 5 feet 4 inches | | 5 feet 4 inches and under | | Over 5 feet 4 inches | |
| | Under 40 years of age | 40 years of age and over | Under 40 years of age | 40 years of age and over | Under 40 years of age | 40 years of age and over | Under 40 years of age | 40 years of age and over |
| | *Calories* | *Calories* | *Calories* | *Calories* | *Calories* | *Calories* | *Calories* | *Calories* |
| All homemakers | 1,880 | 1,680 | 1,810 | 1,700 | 1,920 | 1,630 | 1,960 | 1,800 |
| Under 100 | 1,500 | [1] 1,450 | | | 1,910 | 1,640 | | |
| 100–119 | 2,060 | 1,730 | 2,050 | 1,750 | 1,990 | 1,470 | 1,740 | 1,780 |
| 120–139 | 1,840 | 1,900 | 1,930 | 1,680 | 1,910 | 1,760 | 1,930 | 1,770 |
| 140–159 | 1,760 | 1,550 | 1,590 | 1,670 | 1,830 | 1,610 | 2,040 | 1,730 |
| 160–179 | 1,540 | 1,630 | 1,550 | 1,800 | 2,010 | 1,590 | 2,100 | 1,870 |
| 180 and over | 2,000 | 1,610 | 1,810 | 1,640 | [1] 1,800 | 1,630 | [1] 2,100 | 1,890 |

[1] Average based on 3 schedules or fewer.

with higher than average requirements. Almost one-fourth of the homemakers had less than 0.3 gm. of calcium in the 1-day period, three-fourths had less than 0.8 gm., and only 12 percent had as much as 1 gm.—the amount recommended in 1948 by the National Research Council for women who are not pregnant or lactating.

Relatively few of the women (3 percent) were in the latter half of pregnancy or were nursing infants but those that were did have somewhat larger amounts of calcium in their diets, averaging about a gram a day. Of the 17 women who were reported as pregnant, only 3 had food for the day that was estimated to contain 1.5 gm. or more of calcium, the recommended amount. Ten of the 17 women had diets containing less than 1 gm. of calcium from food sources. Of the 10 women who reported they were nursing infants, only 1 had more than 2.0 gm. (the recommended allowance) of calcium in her food for the day, while 7 had less than 1 gm.

Although day-by-day variation in intake is to be expected with calcium as with other nutrients, unquestionably these figures depict a general low level of calcium in the diets of these urban homemakers.

## Iron

The average amount of iron estimated to have been furnished by the homemakers' food was 12 mg., the amount recommended by the National Research Council as "a desirable level of intake for adults." However, about three-fifths of the 1-day diets contained less than this amount. Here again, the likelihood of day-to-day variation must be remembered.

## Vitamin A Value

The average vitamin A value of the homemakers' meals exceeded by 2,500 units the NRC recommended allowance of 5,000 International Units. The averages in Birmingham and San Francisco were more than 2,000 units higher than those in Buffalo and Minneapolis-St. Paul, but even in the latter two cities the averages (6,380 and 6,340, respectively) exceeded the recommended allowance. Although average diets appeared to have more margin of safety in this vitamin than in any of the other nutrients for which calculations were made, variability was high; 40 percent of the homemakers had diets providing less than 3,000 I. U., while 24 percent had food providing 10,000 I. U. or more.

However, the low levels reported by some homemakers for 1 day probably do not indicate a nutritional problem, since vitamin A is stored in the body.

## B Vitamins

The estimated intakes of thiamine, riboflavin, and niacin in the diets of these women were relatively less generous than the average intake of vitamin A value. The average amount of thiamine in the diets of all the women, 1.0 mg. (after deduction of estimated cooking losses) equalled the recommended allowance for sedentary women.

Taking account of the fact that almost half the women were considered to be moderately active, the weighted average allowance for the women in this study would be 1.1 mg. However, since thiamine requirements are related to total calories in the diet and since the calorie values in the diets of these homemakers were somewhat less than the NRC allowances, the difference between the average intake and allowance may be slightly smaller than at first appears. In the 1948 version of the NRC recommended allowance, the value of 0.5 mg. for each 1,000 calories was accepted as a safe allowance for adults at ordinary low levels of calorie intake (*5*). If it is assumed that individuals in the higher range of calorie values were also in the higher range with respect to thiamine, the average thiamine content of the homemakers' diets was probably close to being adequate. However, 1 mg. was recommended by the NRC as the lowest allowance for adults on any calorie level. In the 1 day reported, about half of the women had less than this amount in their diets, without adjustment for cooking losses. Even fewer would have met the allowance if this adjustment could have been made.[4]

Riboflavin needs, in contrast to those for thiamine, are generally thought to be related to body weight rather than to total calories in the diet. Hence the NRC allowance for riboflavin is the same for women of all degrees of physical activity. The average amount estimated to have been in the homemakers' food, 1.3 mg., was slightly less than the recommended amount of 1.5 mg.

Fewer homemakers had diets that met the recommended allowance for riboflavin than had diets that met the thiamine allowance. Two-thirds of the women reported food for the day that was calculated to have (before cooking) less than 1.5 mg. of riboflavin; one-third, less than 1.0 mg. Although there is less loss of riboflavin than of thiamine in cooking, it is apparent that a large proportion of these homemakers had low levels of riboflavin in their diets.

The average niacin content of the homemakers' diets was about 12 mg., the amount recommended for moderately active women. More than a third of the diets provided less than 10 mg., the suggested intake for sedentary women. It is difficult to assess the adequacy of this nutrient in diets, however. The niacin requirement of individuals appears to be so closely associated with the level of tryptophane in the diet and with the activity of intestinal bacteria that some investigators have questioned the value of calculations of the amounts of niacin in diets.

## Ascorbic Acid (Vitamin C)

The average amount of ascorbic acid in the homemakers' food was 66 mg., slightly less than the NRC's recommendation of 70 mg. Of the 4 cities, San Francisco was the only one in which the estimated average intake of ascorbic acid, 81 mg., was higher than the recommended allowance. In calculating these figures, average losses of vitamin C in storage, cooking, and serving have been applied.[4]

[4] As explained in the Methodology, these adjustment factors are applicable only to averages for groups of diets; therefore, they were not used in calculations of individual diets nor in the distributions shown in table 2, pp. 5 and 6.

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As with the other nutrients, the variation in the ascorbic acid intake of individuals was high. For example, 25 percent of these 1-day diets had less than 30 mg. of ascorbic acid (before cooking) and about as many (22 percent) had 130 mg. or more. Since ascorbic acid is not stored for any length of time in the body, daily intake of recommended amounts is desirable. From the 1-day diets it would appear that many of the homemakers were borderline with respect to their ascorbic acid intake.

## Summary

In a study of 1-day meals of homemakers only a rough appraisal can be made of the adequacy of the diets, chiefly because of (1) variations in individual requirements and (2) problems of getting accurate data on food intake and of interpreting 1-day reports when day-to-day variation probably is large.

The average number of calories calculated in the 1-day diets of homemakers in 4 cities was 1,780. Data on average weight for height and age indicated that the food energy needs of most of the homemakers were being met despite the apparently low levels of calories as compared with those recommended by the National Research Council. In the analysis of factors affecting consumption, age was the one that showed the clearest relationship to calories in the diet. The older women ate less, although they weighed more than the younger women. No relationship was found between the homemaker's weight and the estimated calorie value of her food intake for 1 day.

Data on the average nutrient intake of groups of homemakers as well as those on variations among the homemakers suggest that many may have had diets during a longer period than 1 day that failed to furnish several dietary essentials in recommended amounts. The greatest shortage was in calcium, with the average only three-fifths of the amount recommended. Next lowest was riboflavin.

The averages for protein, iron, thiamine, niacin, and ascorbic acid were close to the recommended allowances, with from half to two-thirds of the 1-day diets providing less than these amounts. The average for vitamin A was the only one that exceeded the recommended allowances. The general low level of nutrients in so many of the diets emphasizes the difficulty of obtaining sufficient amounts of all nutrients when the total food intake is low.

The distribution of homemakers by their nutrient intake (see table 2, pp. 5 and 6) illustrates the problems of interpreting 1-day reports of food consumption. While there is undoubtedly some error in reporting, which may account for some of the extreme figures, it is likely that a sample of the population would again report intakes that vary as much as those shown here. Thus, variation in intake is a characteristic to be expected in any group studied. It is also probable that the same individuals would not continuously report intake at the extremes, if continuous records were taken.

Some of the variability is related to day-to-day differences in eating patterns and some to the uneven distribution of nutrients from one food to another—kale as compared with green beans—so that even with the same general meal pattern day after day, the intake of a given nutrient may differ greatly.

# FACTORS AFFECTING THE NUTRITIVE CONTENT OF HOMEMAKERS' FOOD

In the preceding section, the wide variation in the nutritive content of homemakers' food has been indicated. Relatively little of the variation could be ascribed to differences in reported physical activity or to height and weight since there was little association between these characteristics and the calorie content of the women's 1-day diets. Age, however, was found to be an important factor, the older women having fewer calories than the younger ones.

In this section, relationships between age and other socioeconomic factors and the number of calories and the amounts of protein and other nutrients are discussed. Some of these factors, especially income, household size, and education, have been found in the household surveys to be related to food consumption. The method of analysis used in this study was similar to that used in the household studies. The reports of the homemakers were first sorted into groups by a specified characteristic, for example family income, and then the nutritive content of the day's food tabulated. Averages for the various groups were then compared.[5]

## City in Which Homemaker Lived

Differences among cities in the nutritive content of homemakers' food were not large (see table 1, p. 3). Greatest difference was in vitamin A, the nutrient found to have highest variability in the 1-day consumption of these homemakers as well as in household reports for one week.[6] Homemakers in both Birmingham and San Francisco had diets with average vitamin A value approximately 2,000 International Units higher than the diets of homemakers in the other two cities. Food sources of this vitamin in the two high-rank-

[5] In family-food-consumption surveys it is usually necessary to take some account of differences in the physical activity of adults, of the sex of the adults and older children, and of the ages of children, in order to make comparisons of the nutritive content of diets among groups of people that differ in sex, age, and activity. In this study of homemakers' food it was assumed at the time the tabulation plans were drawn that the degree of physical activity of the homemaker and, to some exteint, her height should be reckoned with in the analysis. Accordingly, the quantities of the nutrients in the diets of all homemakers were calculated in two ways: (1) A simple total, which yields averages per homemaker per day, and (2) an adjusted total, which yields averages per nutrition unit or per adult-male equivalent per day. In the latter set of averages, the effect of possible differences in the degree of physical activity and, to some extent, in the height of the women in the various groups is largely eliminated. As analysis of the data progressed, however, it was determined that there was little association between the reported physical activity of homemakers and the estimated nutritive value of their food (appendix table 8). Hence, the second set of averages, that is, those per adult-male equivalent, have not been used as the basis of the analysis in this section and are included in this report only in the Methodology (see table 27, p. 62) where the food intake of the homemakers is compared with the household averages.

[6] Some foods, such as liver, are extremely rich sources of vitamin A. If only a few homemakers or families in a group happened to have liver or some other rich source of this vitamin in the survey period, the average for the group would be high, but the variation about the average extremely wide.

ing cities, however, were somewhat different (appendix table 9). In Birmingham almost one-fifth of the vitamin A value was derived from sweetpotatoes, while in San Francisco only one-twentieth came from this source. Both groups of women obtained much of their vitamin A value from leafy, green, and yellow vegetables although the proportion was larger in San Francisco, three-fifths compared with two-fifths in Birmingham. Homemakers in Buffalo and Minneapolis-St. Paul used as many leafy, green, and yellow vegetables as those in Birmingham (appendix table 10) but did not use the sweetpotatoes that furnished so much vitamin A value to the winter diets in Birmingham.

The meals of San Francisco homemakers, in addition to providing more vitamin A value than the meals of women in the other cities, also provided somewhat more calories, protein, iron, niacin, and ascorbic acid. Contributory to this was their high consumption of dairy products, vegetables and fruits, and meat, poultry, and fish.

Calcium was found in about the same quantities in the food consumed by homemakers in all cities, yet the source was considerably different as is shown in the following (from appendix table 9):

| City | Percent of total calcium furnished by— | | | |
|---|---|---|---|---|
| | Milk, cream, ice cream, cheese | Grain products | Leafy, green, and yellow vegetables | Other vegetables and fruits (excluding potatoes and dry beans and peas) |
| Birmingham | 54 | 15 | 13 | 7 |
| Buffalo | 50 | 22 | 6 | 7 |
| Minneapolis-St. Paul | 57 | 19 | 5 | 7 |
| San Francisco | 55 | 17 | 8 | 8 |

Leafy, green, and yellow vegetables made more of a contribution to the calcium content of the Birmingham diets than to those in the other cities, despite the fact that Birmingham homemakers consumed only about half as much of these vegetables as the San Francisco women and slightly less than the women in Buffalo and the Twin Cities. In Birmingham, however, turnip and mustard greens, collards, and kale were frequently used. These contain much more calcium per serving than some of the vegetables, such as lettuce and carrots, used most frequently in the other cities.

The smaller contribution of grain products to total calcium in the Birmingham diets is the result, in part, of the method of handling bakery products in the tabulation. In Birmingham, much of the baked goods used was homemade—biscuits, rolls, cornbread. The flour, some of which was of the self-rising type with high calcium content, was tabulated as grain products, but the milk used in preparing these products in the home was tabulated with the other milk products. In San Francisco and in the two northern cities, on the other hand, much of the baked goods was readymade bread or other bakery products, and as is customary in family dietary surveys, all of the nutrients in the readymade products, including the calcium in the milk or other products used in making the bread or other baked goods, was tabulated as a part of the grain products group.

The average size and the income of the families of which the homemakers were a part differed from city to city. Family size ranged from 2.95 persons in San Francisco to 3.56 in Buffalo (*15*). The city-wide average income in Birmingham was $2,865, in San Francisco, $4,050 (after deduction of Federal income tax). Comparisons at similar income levels in the four cities show, in general, that patterns of food and nutrient consumption described above hold although the differences are less marked at higher income levels (appendix tables 10 and 11). This had also been found previously in analyses of the food consumption of families (*15*).

## Family Income

For most of the nutrients, the average content of the homemakers' meals was higher for the upper than the lower income groups (appendix table 11). Where incomes were $6,000 or over ($4,000 or over in Birmingham), the amounts of nutrients were considerably higher than where incomes were under $2,000 ($1,000 in Birmingham). At the three income levels between, the average amounts of many of the nutrients were similar—not as high as the top income group and not as low as the bottom. All four cities and all nutrients did not show the same pattern, so summarization of effect of family income is not clear cut.

In general, income-consumption relationships were less clear for the homemakers than for their families. This is understandable since 1-day records of an individual may be expected to have more sampling variability than 7-day estimates of family consumption. It is also possible that the homemakers' consumption of such foods as milk and fruits and vegetables depends relatively more upon likes and dislikes and less upon family income than does consumption by the entire family. With meat, poultry, and fish, the more important limiting factor may be family income.

## Size of Household

For the homemakers in Buffalo, Minneapolis-St. Paul, and San Francisco,[7] regardless of income, quantities of nutrients other than ascorbic acid were much the same in households of different size (appendix table 12). For example, the average number of calories and grams of protein in the diets of women who were members of households of four sizes were as follows:

| Size of household | Food energy | Protein |
|---|---|---|
| | *Calories* | *Grams* |
| 2 persons | 1, 730 | 65 |
| 3 persons | 1, 830 | 69 |
| 4 persons | 1, 750 | 64 |
| 5 or more persons | 1, 750 | 65 |

[7] Reports from these cities were pooled in order to have enough cases to hold income constant in testing the effect of the size of household, age, education, and employment of homemaker.

For ascorbic acid, the amounts in the diets of women in households of 2 and 3 persons were 99 and 96 mg. compared with 76 and 77 mg. in households of 4 and 5 or more persons.

Within the same family-income bracket, there was no more difference between the nutritive quality of the diets of women in large and small families than there was when income was disregarded (as above). This was true even for ascorbic acid.

## Age of Homemaker

The relationships existing between the homemaker's age and weight and the number of calories in her food are presented in an earlier section. In this section, comparisons of the diets of women of different ages are made for all nutrients, on the basis of averages for homemakers living in Buffalo, Minneapolis-St. Paul, and San Francisco (appendix table 13).

As was the case with calories, the younger homemakers had larger quantities of several nutrients in their diets than had the older homemakers. This relationship was most marked for calcium. The youngest homemakers (those under 30 years of age) had two-thirds of a gram of calcium in their food compared with only about a half gram in the food of the women over 40. The youngest group also had diets more generous with respect to protein, thiamine, and riboflavin, but did not fare any better than the older groups with respect to vitamins A and C. In general, these relationships also held true when the various income classes were considered separately.

Although tabulations of food quantities were not made for the different age groups, it is probably correct to attribute the larger quantities of calcium, riboflavin, protein, and thiamine in the diets of the younger women to larger consumption of milk. Other studies have shown that milk drinking by younger adults is greater than by those past middle age (*3*).

## Education of Homemaker

Homemakers with some college education had food furnishing higher average quantities of almost all the dietary essentials for which calculations were made than those with high school or elementary school education (appendix table 14). The most marked differences were in calcium and ascorbic acid.

Because some of the increases in nutrients with increased education may have been partly due to income differences, average quantities of the dietary essentials were again compared for homemakers at the same family-income level. At each income level (family income, not necessarily same income per person), quantities of calcium and ascorbic acid were higher for homemakers with more formal education than for those with less. The extent of the differences for several nutrients is indicated by the following averages for homemakers in the income class $3,000 to $4,000 (from appendix table 14):

| Item | Highest grade completed— | | |
|---|---|---|---|
| | Elementary school | Some high school | Some college |
| Nutrient: | | | |
| Food energy—calories | 1, 750 | 1, 760 | 2, 000 |
| Protein—grams | 69 | 63 | 74 |
| Calcium—do | . 48 | . 59 | . 75 |
| Thiamine—milligrams | 1. 22 | 1. 17 | 1. 31 |
| Riboflavin—do | 1. 56 | 1. 38 | 1. 62 |
| Niacin—do | 17. 2 | 12. 9 | 14. 6 |
| Ascorbic acid—do | 54 | 96 | 105 |
| Average household size—persons | 4. 00 | 3. 55 | 3. 42 |
| Average age of homemaker—years | 44 | 38 | 34 |

It is true that households were smaller for the group with more education in this and other income classes, but, as was previously pointed out, differences in household size within income class had little effect on the nutritive content of homemakers' diets (p. 17). Probably of most importance in the quality of the women's diets were age and education. These homemakers with more education tended to be the younger homemakers. Because they were both younger and better educated, their diets showed the effects of changing food habits. Their food habits may thus be indicative of changes that take place as new generations are influenced by nutritional knowledge.

### Employment of Homemaker

Although the employment status of the homemaker was found to have little effect on the nutritive content of family diets, it was thought that it might have an appreciable influence on the diet of the homemaker herself. Relatively little difference was found, however, between the average amounts of the various nutrients in the diets of women employed outside the home and those not so employed (appendix table 15).

## CONTRIBUTION OF EACH MEAL TO DAY'S FOOD

Recent research in nutrition has emphasized the importance of having intake of some nutrients fairly equally divided among the three meals of the day as well as in adequate daily amounts. It appears that with small, low-protein breakfasts people tend to become more fatigued and irritable, and less able to concentrate after a few hours than with breakfasts providing about one-third of the day's requirements (*2, 10*). This lowered performance may carry over throughout the afternoon for individuals eating a very light lunch. Another effect of too small a breakfast is that it is difficult and often impossible to make up the total requirement during the rest of the day, particularly if lunch is light.

Because of interest in the division of daily food energy and nutrients among meals and because information on meal patterns and food habits of women is useful background data for nutrition-education programs, special tabulations were made for 2 of the 4 cities in this study, Birmingham and Minneapolis-St. Paul.[8] They were selected because, of the four cities, they probably best represent the somewhat different food habits of the South and the North.

## Division of Day's Nutrients

As might be expected, in neither city were the calories in the homemakers' food equally divided among the three meals of the day (appendix table 16). The division was more nearly equal in Birmingham, however, than in Minneapolis-St. Paul; women of the southern city ate relatively more for breakfast and less at the other meals than did the Twin Cities women. In the Birmingham diets, 28 percent of the total day's calories were contributed by the morning meal, 27 percent by the noon meal, 40 percent by the evening meal, and 5 percent by between-meal snacks. Corresponding percentages for the Minneapolis-St. Paul diets were 18, 29, 45, and 8.

In Birmingham, the morning meal provided smaller proportions of the day's total protein, minerals, and vitamins than of the day's calories. For example, only 23 percent of the day's total protein came from the morning meal, compared with 28 percent of the total food energy. Of the nutrients calculated, breakfast provided the smallest shares of vitamin A, ascorbic acid, and niacin (12, 18, and 19 percent, respectively).[9]

In contrast, the morning meal in Minneapolis-St. Paul provided a much larger share of the day's total ascorbic acid than of calories, 46 percent compared with 18 percent. Only 13 percent of the total protein was provided by the morning meal. Since the total day's intake was 61 gm. (appendix table 11), breakfast furnished an average of only 8 gm. of protein, which may be too low for best nutritional results.

The noon meal in both cities provided from one-fourth to one-third of all nutrients, except ascorbic acid in the diets of the Minneapolis-St. Paul homemakers. Not quite one-fifth of their ascorbic acid came from the noon meal.

Approximately one-half of the total daily amounts of several nutrients in the Minneapolis-St. Paul diets was supplied by the evening meal. For calcium, riboflavin, and ascorbic acid, the proportions were somewhat lower, ranging as low as one-third for calcium and ascorbic acid. In Birmingham, although calories in the evening meal were only 40 percent of the total, about half of the day's total of all nutrients calculated except calcium and riboflavin was furnished at this meal.

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[8] Another use of the data is in the interpretation of family-food-consumption surveys. See pp. 25–26.

[9] The figures used in this section for thiamine, riboflavin, niacin, and ascorbic acid have been adjusted for cooking losses (see appendix table 16).

## Division of Day's Food

Because of the differences in handling the data on quantities of food in the several cities (see Methodology, Summation of Food Quantities, pp. 56 and 58), comparisons of quantities of foods consumed and the proportion eaten at each meal (appendix table 17) are necessarily rough. But they are useful in pointing out major reasons for the division of the nutrients in the diets of homemakers in the two cities. Why, for example, did the morning meal contribute more to the total day's calories in Birmingham than in Minneapolis-St. Paul? According to appendix table 17, Birmingham women used a much larger share of their day's total quantities of eggs, pork, lunch meat, fish, sirups, and flour and meals at the morning meal than did the women in the Twin Cities. On the other hand, the Birmingham women not only used less citrus fruit and tomato juice during the day but they used smaller proportions at breakfast, with a resultant smaller share of the total ascorbic acid contributed by the morning meal than in Minneapolis-St. Paul. The proportion of the vitamin A in homemakers' diets furnished by the morning meal was low in both cities chiefly because it was derived in large part from the consumption of vegetables.

The frequency of use of commodities at the three meals of the day and as between-meal snacks (apart from some of those in mixed dishes) is given in appendix table 18.[10] For foods that are not likely to be served in mixed dishes, the data can be especially informative and useful in nutrition-education programs. For example, in a 1-day period, fresh citrus fruit was used by only 10 percent of the Birmingham homemakers at breakfast compared with its use by 32 percent of the Minneapolis-St. Paul women. A green or yellow vegetable was used at the evening meal by 58 percent of the women in Minneapolis-St. Paul, by 46 percent of the women in Birmingham.

The heavier breakfast of the southern homemakers is indicated by the larger proportions having eggs, bacon or salt pork, and other pork cuts at the morning meal. The percentages of the homemakers in the two cities using these foods at the morning meal were as follows:

| Food | Birmingham | Minneapolis-St. Paul |
|---|---|---|
| Eggs | 49 | 27 |
| Bacon or salt pork | 30 | 9 |
| Other pork cuts | 12 | (1) |

[1] Less than 1.

[10] Note that some foods included in mixed dishes in food away from home and in some of the home-prepared mixed dishes in Minneapolis-St. Paul were not counted here since the mixture was coded according to its major component. For example, beef stew eaten away from home or at home on some of the Minneapolis-St. Paul reports was coded as "meat mixture" and was counted only in the meat total in this table. The potatoes that were in the stew were not coded separately and were not accounted for in this table.

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On the other hand, more of the Twin Cities women than of the Birmingham women used cereal, hot or cold, at breakfast (31 percent compared with 9 percent). Associated with the greater use of cereals in the Minneapolis-St. Paul diets, were larger amounts of whole fluid milk used at the morning meal.

## Effect of Family Income

The income of the family had more effect on the proportion of nutrients furnished by each meal of the day in the diets of the Birmingham homemakers than in those of the Minneapolis-St. Paul homemakers (appendix table 16). In Birmingham, the higher the family income, the larger the share of calories and of most of the other nutrients furnished by the noon meal and the smaller the share from the morning meal. In Minneapolis-St. Paul, family income made little difference. On the whole, the pattern of distribution of nutrients among meals was similar among the higher income families in the two cities. This similarity is illustrated by the proportion of calories contributed by each meal in diets of higher income women in the two cities:

| City and income | Percent of day's calories from— | | | |
|---|---|---|---|---|
| | Morning meal | Noon meal | Evening meal | Between meals |
| Birmingham homemakers in families with incomes of $4,000 and over | 20 | 35 | 41 | 4 |
| Minneapolis-St. Paul homemakers in families with incomes of $6,000 and over | 18 | 30 | 47 | 5 |

Ascorbic acid remained an exception. The morning meal furnished a much larger share of the day's total amount of this vitamin in the diets of higher income women in the northern city than in the southern—45 and 23 percent, respectively.

Nevertheless these data indicate that in many respects, differences between regional food patterns are reduced when incomes are high.

## Effect of Age of Homemaker

It was thought that younger homemakers might divide their day's food intake differently from older homemakers; hence tabulations of nutrients were made separately for several age groups in the two cities (appendix table 19). The results seem to indicate, however, that in both cities, age made only a little difference—much less difference in the way nutrients were distributed through the day than in the total nutritive content of diets. There was some tendency for the women over 60 years of age to eat heavier breakfasts and lighter evening meals than the younger women. The morning meal of the older

group provided more—and the evening meal less—of food energy, calcium, vitamin A value, and ascorbic acid in Minneapolis-St. Paul and of all nutrients in Birmingham. Few differences were apparent among the several age classes of women under 60 years.

## Effect of Education of Homemaker

Since the formal educational level of the homemaker is positively correlated with family income, it might be expected that the division of the day's meals of the women with more education would follow the pattern of women in higher income families. In Birmingham, the analysis for educational level does parallel that for family income (appendix table 20). As has been pointed out, higher incomes in Birmingham meant smaller shares of nutrients (with the exception of ascorbic acid) from breakfast and more from the noon meal. In the educational analysis, homemakers with some college education obtained a smaller share of the day's nutrients (except ascorbic acid) at breakfast and a larger share at the noon meal than did homemakers with only elementary schooling. This is illustrated by the following figures on the proportion of calories furnished by each meal of the day in the diets of Birmingham homemakers of three educational levels:

| Highest grade completed | Percent of day's calories from— | | | |
|---|---|---|---|---|
| | Morning meal | Noon meal | Evening meal | Between meals |
| Elementary school | 32 | 23 | 42 | 3 |
| Some high school | 26 | 28 | 39 | 7 |
| Some college | 22 | 33 | 41 | 4 |

In Minneapolis-St. Paul (where there had been no association between income and division of the day's nutrients), there was little association between formal education and division of the day's nutrients.

## Effect of Employment of Homemaker

Whether homemakers were employed away from home made little difference in the proportion of the day's nutrients received from the different meals of the day (appendix table 21). For Birmingham homemakers not employed away from home, nutrients from the morning meal were slightly higher and from the noon meal slightly lower than for those employed. In the diets of the "not employed" group in Minneapolis-St. Paul, between-meal food contributed a slightly smaller share of the day's total of calories and three other nutrients than in the diets of the employed women.

# NUTRITIVE CONTENT OF FOOD AT HOME AND AWAY FROM HOME

Homemakers in this study reported both on food eaten at home and food eaten away from home. In the preceding sections, all data have referred to the total food consumed by the homemaker. In this section, data on the proportion of the total meals eaten away from home are presented and a comparison is made of the nutritive value of meals at home and of those eaten away from home.

## Proportion of Meals Eaten Away From Home

Only a small share of the homemakers' meals was eaten away from home, 5 percent in Birmingham and 10 percent in Minneapolis-St. Paul (appendix table 22). As expected, larger proportions of the meals of high-income families were eaten away from home than of meals of low-income families and larger proportions of the noon meals than of other meals (appendix table 23). In Birmingham, however, the homemakers in the lowest income group had 7 percent of their meals away from home, which was a higher proportion than meals eaten away by homemakers in the middle-income groups. The homemakers in the lowest income group may have received meals while employed in domestic service. In Birmingham, 9 percent of the women who had between-meal food reported it as eaten away from home; in the Twin Cities, 26 percent.

## Comparison of Meals at Home and Away

For the day's average of morning, noon, and evening meals, food away from home provided more calories, protein, minerals, and most of the vitamins than food at home (appendix table 24). One reason for this difference is that the two heaviest meals of the day, those eaten at noon and in the evening, were the ones most frequently eaten away from home (appendix table 23). Another reason is that the noon meal was a bigger meal for those eating it away. For example, for homemakers in Minneapolis-St. Paul, the average number of calories in meals at home and away from home was as follows:

| Meal of day | Calories per meal eaten— | | |
|---|---|---|---|
| | At home | Away from home | Total |
| Morning, noon, evening meals (average of the 3 meals) | 529 | 752 | 547 |
| Morning meal | 330 | (1) | 331 |
| Noon meal | 493 | 711 | 521 |
| Evening meal | 779 | 813 | 782 |
| Between meals | 264 | 302 | 274 |

[1] Only one homemaker had breakfast away from home.

In Birmingham, the average quantities of all the nutrients calculated were higher in meals away from home than in meals at home (average of 3 meals). The smallest differences were in thiamine and ascorbic acid. In Minneapolis-St. Paul, food away from home was considerably higher in nutritive value than food at home except in vitamin A and ascorbic acid. In these two vitamins, food away from home was 7 and 33 percent, respectively, lower than food at home.

Because relatively few of the homemakers' meals were eaten away from home, however, the average amounts of the nutrients in the total food both at home and away from home were but slightly higher than in the averages for food at home only. The greatest difference was in the noon meal since that was the meal most frequently eaten away from home.

## IMPLICATIONS FOR DIETARY SURVEYS OF SEPARATE MEAL ANALYSIS AND OF DATA ON FOOD AWAY FROM HOME

In addition to the descriptive information on the food patterns of urban homemakers, the data on the share of food eaten at each meal and on food eaten away from home contribute to the interpretation of data from family food consumption surveys. In most family surveys, information is obtained on the kinds and quantities of foods used at home and the number and some description of the persons served meals at home. Some family members may also eat one or more meals away from home during the week, but these meals are not counted in measurements of household size—either in terms of persons or equivalent nutrition units. Then when per person quantities of either foods or nutrients are calculated by such measurements and the results are interpreted as descriptive of the total week's food, two assumptions are implicit: (1) That each of the three meals of the day are equal and (2) that food in meals away from home is of the same average quantity and nutritive content as food in meals at home.

The data on the proportion of the total day's quantities of nutrients obtained at each meal of the day indicate that for homemakers in Birmingham and Minneapolis-St. Paul, the first assumption is not wholly valid. The noon meal in both cities contributed about a third of the day's total of the nutrients, but the morning meal contributed less than a third and the evening meal considerably more than a third.

This report suggests also that the second assumption, that meals eaten away from home are equal in nutritive content to those eaten at home, is open to question. For calories, protein, the minerals, and most of the vitamins, the nutritive value of the homemakers' noonday meal—the one most frequently eaten away from home—was found to be slightly higher when this meal was eaten away than when eaten at home. For vitamin A and ascorbic acid, the findings in the two cities were contradictory. Variability in the intake of these two vitamins is high and more data are needed to substantiate these findings before conclusions for these two nutrients can be established.

Since the noon meal is the one that is probably also eaten away from home most frequently by men and children and if it also contributes a third of their total day's nutrients, the effect of the first assumption on the analysis of family diets is somewhat moderated. However, since of the other two meals, the evening meal is more frequently eaten away from home, and in homemakers' food at any rate is by far the heavier, the net result of making this assumption is probably to underestimate the value of the total day's diet. Before more definite conclusions can be drawn on this point, of course, more studies of this kind are needed, especially of the meals of men and children, in both urban and rural families.

If meals eaten away from home by other family members also have higher content of some nutrients than the meals eaten at home, current estimates of the nutritive quality (except for vitamins A and C) of urban family diets are probably slightly underestimated. Since higher income families eat more of their meals away from home, the quality of the high-income families' diets is then underestimated relatively more than that of the diets of the lower income families. The "income elasticity" of the quantities of nutrients in diets, therefore, may be understated.

Because of the methods used in coding and tabulating food quantities in this study (Methodology, pp. 56 and 58), it is not possible to make any quantitative comparison of the foods used per meal at home and per meal away from home. Examination of the available data including the original menus indicates that the homemakers' noon meal when eaten away from home tended to be a larger meal than when eaten at home, with meat, poultry, fish, potatoes, "other" vegetables and fruits, and grain products reported more often and in larger quantities. The noon meal eaten at home was often a rather simple meal of such foods as soup, sandwiches, eggs, or a leftover food. Desserts were reported much more often for this meal when eaten away than at home. As for the nutrients, it is in those foods used in larger quantity away from home than at home that some understatement of "income elasticity" in family diets probably exists.

Because the data in this report apply only to urban homemakers, it is not possible to estimate the effect of meals away from home on either family consumption of specific foods or the nutritive content of family diets for the total population. The proportion of meals eaten away from home and the contribution of these meals to total nutrients were relatively small for the homemakers in Birmingham and Minneapolis-St. Paul. Nevertheless, the data suggest that in family food consumption surveys, information on whether the meals eaten away from home were morning, noon, or evening meals and the quantities of foods consumed away from home should be taken into account in evaluating the adequacy of family diets and in analyzing the income-consumption relationships of both foods and nutrients.

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# APPENDIX A. TABLES

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TABLE 8.—PHYSICAL ACTIVITY AND WEIGHT OF HOMEMAKER AND NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Averages per homemaker, 3 cities combined*

[Housekeeping families of 2 or more persons in Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Item | All homemakers | Homemakers classified as— | | | | | |
|---|---|---|---|---|---|---|---|
| | | Moderately active | Very active | Sedentary | Resting | Pregnant [1] | Lactating |
| Homemakers studied—number | 776 | 333 | 26 | 392 | 3 | 15 | 7 |
| Weight—pounds | 141 | 141 | 150 | 139 | 150 | 141 | 138 |
| Food energy—calories | 1, 770 | 1, 750 | 1, 830 | 1, 770 | 1, 230 | 1, 890 | 2, 110 |
| Protein—grams | 66 | 66 | 66 | 65 | 48 | 75 | 75 |
| Calcium—do | . 58 | . 54 | . 55 | . 58 | . 36 | . 99 | 1. 06 |
| Iron—milligrams | 11. 6 | 11. 5 | 11. 1 | 11. 7 | 6. 6 | 11. 6 | 12. 1 |
| Vitamin A value—International Units | 7, 190 | 7, 020 | 5, 750 | 7, 510 | 1, 820 | 5, 420 | 8, 650 |
| Thiamine [2]—milligrams | 1. 19 | 1. 22 | 1. 38 | 1. 16 | . 78 | 1. 08 | 1. 13 |
| Riboflavin [2]—do | 1. 42 | 1. 43 | 1. 31 | 1. 38 | . 77 | 2. 06 | 1. 96 |
| Niacin [2]—do | 14. 0 | 14. 0 | 13. 8 | 14. 1 | 10. 5 | 13. 6 | 12. 8 |
| Ascorbic acid [2]—do | 89 | 84 | 59 | 95 | 55 | 101 | 95 |

[1] Latter half of pregnancy.
[2] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 9.—CONTRIBUTION OF 11 FOOD GROUPS TO NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Percent of each nutrient contributed by 11 food groups, 4 cities*

[Homemakers in housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| City and food group | Food energy | Protein | Calcium | Iron | Vitamin A value | Not adjusted for nutrient losses in cooking | | | | Adjusted for nutrient losses in cooking [1] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Thiamine | Riboflavin | Niacin | Ascorbic acid | Thiamine | Riboflavin | Niacin | Ascorbic acid |
| BIRMINGHAM | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| All food | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 |
| Milk, cream, ice cream, cheese | 9. 6 | 16. 7 | 54. 1 | 1. 7 | 5. 1 | 6. 2 | 28. 4 | 1. 9 | 3. 1 | 7. 5 | 30. 3 | 2. 1 | 4. 5 |
| Fats, oils | 23. 3 | 3. 0 | (2) | 1. 7 | 6. 3 | 5. 0 | 1. 1 | 2. 5 | 0 | 3. 0 | 1. 2 | 2. 8 | 0 |
| Eggs | 3. 2 | 7. 6 | 3. 3 | 8. 3 | 4. 9 | 3. 8 | 8. 3 | (2) | 0 | 3. 8 | 8. 3 | (2) | 0 |
| Meat, poultry, fish | 16. 9 | 36. 4 | 3. 3 | 27. 5 | 14. 5 | 30. 6 | 25. 0 | 50. 7 | 2. 1 | 27. 8 | 25. 6 | 50. 3 | 3. 0 |
| Dry beans and peas, nuts | 3. 4 | 6. 1 | 1. 6 | 10. 8 | (2) | 8. 8 | 2. 2 | 4. 4 | (2) | 10. 5 | 2. 4 | 4. 9 | (2) |
| Potatoes, sweetpotatoes | 4. 1 | 3. 0 | 1. 6 | 4. 2 | 19. 2 | 5. 0 | 2. 2 | 5. 1 | 13. 4 | 4. 5 | 1. 8 | 4. 2 | 11. 9 |
| Citrus fruits, tomatoes | 1. 6 | 1. 5 | 3. 3 | 2. 5 | 4. 1 | 3. 1 | 1. 7 | 2. 5 | 25. 8 | 3. 8 | 1. 8 | 2. 8 | 35. 9 |
| Leafy, green, and yellow vegetables | 1. 5 | 3. 0 | 13. 1 | 9. 2 | 39. 7 | 5. 6 | 9. 4 | 3. 8 | 45. 3 | 3. 8 | 6. 0 | 2. 8 | 32. 8 |
| Other vegetables and fruits | 3. 4 | 1. 5 | 3. 3 | 5. 0 | 5. 6 | 3. 1 | 3. 3 | 3. 2 | 9. 3 | 3. 0 | 3. 0 | 2. 8 | 10. 4 |
| Sugars, other sweets | 9. 2 | (2) | 1. 6 | 5. 8 | (2) | (2) | . 6 | . 6 | 1. 0 | (2) | . 6 | . 7 | 1. 5 |
| Grain products | 23. 8 | 21. 2 | 14. 8 | 23. 3 | . 6 | 28. 8 | 17. 8 | 25. 3 | (2) | 32. 3 | 19. 0 | 26. 6 | (2) |
| BUFFALO | | | | | | | | | | | | | |
| All food | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 |
| Milk, cream, ice cream, cheese | 10. 8 | 13. 2 | 50. 1 | 1. 7 | 7. 6 | 5. 9 | 26. 6 | 1. 7 | 2. 3 | 7. 2 | 27. 9 | 1. 8 | 2. 9 |
| Fats, oils | 6. 7 | 1. 3 | (2) | . 8 | 4. 7 | 2. 0 | . 6 | . 6 | 0 | . 8 | . 6 | . 6 | 0 |
| Eggs | 2. 8 | 5. 3 | 3. 7 | 6. 8 | 4. 7 | 2. 6 | 5. 8 | (2) | 0 | 2. 4 | 6. 1 | (2) | 0 |
| Meat, poultry, fish | 25. 4 | 48. 7 | 5. 6 | 41. 7 | 17. 0 | 44. 5 | 34. 1 | 62. 8 | 3. 5 | 40. 8 | 34. 0 | 62. 9 | 4. 4 |
| Dry beans and peas, nuts | 1. 5 | 1. 3 | 1. 8 | 4. 2 | . 2 | 1. 3 | 1. 2 | 2. 2 | (2) | 1. 6 | 1. 2 | 2. 4 | (2) |
| Potatoes, sweetpotatoes | 4. 7 | 2. 6 | 1. 8 | 5. 1 | 1. 6 | 6. 5 | 2. 3 | 5. 5 | 15. 1 | 6. 4 | 1. 8 | 4. 9 | 11. 8 |
| Citrus fruits, tomatoes | 2. 6 | 1. 3 | 3. 7 | 3. 4 | 6. 5 | 5. 2 | 2. 3 | 2. 8 | 47. 7 | 6. 4 | 2. 4 | 3. 0 | 57. 4 |
| Leafy, green, and yellow vegetables | 1. 8 | 2. 6 | 5. 6 | 7. 6 | 47. 6 | 5. 9 | 4. 6 | 2. 8 | 20. 9 | 4. 0 | 3. 0 | 1. 8 | 13. 2 |
| Other vegetables and fruits | 4. 5 | 1. 3 | 3. 7 | 5. 9 | 7. 6 | 3. 9 | 4. 0 | 3. 9 | 9. 3 | 4. 0 | 3. 6 | 3. 7 | 8. 8 |
| Sugars, other sweets | 7. 1 | 1. 3 | 1. 8 | . 8 | . 2 | (2) | 1. 2 | (2) | (2) | (2) | 1. 2 | (2) | (2) |
| Grain products | 32. 1 | 21. 1 | 22. 2 | 22. 0 | 2. 3 | 22. 2 | 17. 3 | 17. 7 | 1. 2 | 26. 4 | 18. 2 | 18. 9 | 1. 5 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MINNEAPOLIS-ST. PAUL** | | | | | | | | | | | | | |
| All food | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 |
| Milk, cream, ice cream, cheese | 14. 3 | 17. 4 | 57. 1 | 2. 9 | 10. 6 | 8. 9 | 32. 9 | 2. 5 | 3. 6 | 10. 7 | 34. 5 | 2. 7 | 4. 3 |
| Fats, oils | 10. 2 | 1. 4 | (2) | 1. 0 | 7. 1 | 2. 7 | . 6 | 1. 2 | 0 | 1. 7 | . 7 | 1. 4 | 0 |
| Eggs | 2. 8 | 5. 8 | 3. 4 | 7. 6 | 5. 2 | 2. 7 | 7. 5 | (2) | 0 | 2. 5 | 7. 2 | (2) | 0 |
| Meat, poultry, fish | 21. 4 | 45. 1 | 3. 4 | 35. 1 | 14. 4 | 38. 4 | 27. 3 | 58. 3 | 2. 4 | 34. 7 | 27. 5 | 58. 1 | 2. 9 |
| Dry beans and peas, nuts | 1. 2 | 1. 4 | 1. 7 | 3. 8 | . 2 | 1. 4 | . 6 | 1. 8 | (2) | 1. 7 | . 7 | 2. 0 | (2) |
| Potatoes, sweetpotatoes | 4. 2 | 2. 9 | 1. 7 | 5. 7 | 2. 5 | 6. 2 | 2. 5 | 6. 1 | 14. 3 | 5. 8 | 2. 0 | 5. 4 | 11. 4 |
| Citrus fruits, tomatoes | 2. 8 | 1. 4 | 3. 4 | 4. 8 | 7. 8 | 5. 5 | 2. 5 | 3. 1 | 53. 5 | 6. 6 | 2. 6 | 3. 4 | 61. 4 |
| Leafy, green, and yellow vegetables | 1. 6 | 1. 4 | 5. 2 | 6. 7 | 41. 5 | 4. 8 | 3. 7 | 3. 1 | 13. 1 | 3. 3 | 2. 6 | 2. 0 | 8. 6 |
| Other vegetables and fruits | 6. 4 | 2. 9 | 3. 4 | 8. 6 | 8. 9 | 6. 8 | 5. 0 | 4. 3 | 13. 1 | 6. 6 | 3. 9 | 4. 1 | 11. 4 |
| Sugars, other sweets | 6. 1 | (2) | 1. 7 | 1. 9 | . 2 | (2) | . 6 | (2) | (2) | (2) | . 7 | (2) | (2) |
| Grain products | 29. 0 | 20. 3 | 19. 0 | 21. 9 | 1. 6 | 22. 6 | 16. 8 | 19. 6 | (2) | 26. 4 | 17. 6 | 20. 9 | (2) |
| **SAN FRANCISCO** | | | | | | | | | | | | | |
| All food | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 | 100. 0 |
| Milk, cream, ice cream, cheese | 12. 5 | 16. 5 | 55. 0 | 2. 4 | 7. 7 | 6. 7 | 31. 3 | 2. 0 | 2. 7 | 8. 3 | 33. 5 | 2. 2 | 3. 5 |
| Fats, oils | 15. 1 | 1. 3 | (2) | . 8 | 5. 3 | 3. 1 | . 6 | 1. 0 | 0 | 1. 5 | . 6 | 1. 1 | 0 |
| Eggs | 2. 9 | 6. 3 | 3. 3 | 7. 2 | 4. 3 | 3. 1 | 7. 3 | (2) | 0 | 3. 0 | 7. 2 | (2) | 0 |
| Meat, poultry, fish | 23. 5 | 46. 8 | 5. 0 | 38. 4 | 7. 8 | 36. 8 | 27. 9 | 61. 9 | 1. 8 | 34. 2 | 28. 7 | 62. 4 | 2. 4 |
| Dry beans and peas, nuts | 1. 9 | 2. 5 | 1. 7 | 4. 8 | . 1 | 4. 3 | 1. 1 | 2. 0 | (2) | 5. 3 | 1. 2 | 2. 2 | (2) |
| Potatoes, sweetpotatoes | 3. 6 | 2. 5 | 1. 7 | 4. 0 | 4. 6 | 5. 5 | 1. 7 | 5. 0 | 10. 7 | 5. 3 | 1. 2 | 4. 5 | 9. 4 |
| Citrus fruits, tomatoes | 2. 8 | 1. 3 | 3. 3 | 4. 0 | 5. 7 | 5. 5 | 2. 2 | 3. 0 | 41. 9 | 6. 8 | 2. 4 | 3. 4 | 52. 9 |
| Leafy, green, and yellow vegetables | 2. 7 | 3. 8 | 8. 3 | 13. 6 | 57. 0 | 9. 8 | 8. 4 | 4. 5 | 29. 5 | 6. 8 | 5. 4 | 2. 8 | 18. 8 |
| Other vegetables and fruits | 6. 6 | 2. 5 | 5. 0 | 8. 0 | 6. 6 | 6. 7 | 6. 1 | 5. 5 | 12. 5 | 6. 8 | 5. 4 | 5. 1 | 11. 8 |
| Sugars, other sweets | 5. 2 | (2) | (2) | . 8 | (2) | (2) | (2) | (2) | . 9 | (2) | (2) | (2) | 1. 2 |
| Grain products | 23. 2 | 16. 5 | 16. 7 | 16. 0 | . 9 | 18. 5 | 13. 4 | 15. 1 | (2) | 22. 0 | 14. 4 | 16. 3 | (2) |

[1] See Methodology, Nutrient losses in cooking, p. 60.
[2] 0.05 percent or less.

NOTE: See Methodology, Calculation of food quantities, pp. 56 and 58.

TABLE 10.—QUANTITIES OF SELECTED FOOD GROUPS CONSUMED IN 1 DAY: *Averages per homemaker, by income, 4 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis- St.Paul, Minn., and San Francisco, Calif., winter 1948]

| City and family income in 1947 (dollars) | Homemakers | Milk, cream, ice cream, cheese (milk equivalent) | Eggs | Meat, poultry, fish (excluding bacon, salt pork) | Dry beans and peas, nuts | Potatoes, sweetpotatoes | Citrus fruits, tomatoes | Leafy, green, and yellow vegetables | Other vegetables and fruits | Grain products (flour equivalent) |
|---|---|---|---|---|---|---|---|---|---|---|
| BIRMINGHAM | *Number* | *Cups* | *Number* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* |
| All incomes | [1] 261 | 1. 11 | 0. 72 | 0. 31 | 0. 04 | 0. 18 | 0. 18 | 0. 17 | 0. 22 | 0. 22 |
| 0–999 | 19 | . 78 | . 37 | . 14 | . 07 | . 14 | . 07 | . 15 | . 15 | . 18 |
| 1,000–1,999 | 51 | 1. 05 | . 60 | . 30 | . 04 | . 19 | . 09 | . 10 | . 22 | . 23 |
| 2,000–2,999 | 82 | 1. 15 | . 67 | . 31 | . 04 | . 18 | . 16 | . 19 | . 19 | . 21 |
| 3,000–3,999 | 52 | 1. 20 | . 90 | . 30 | . 03 | . 17 | . 25 | . 14 | . 23 | . 22 |
| 4,000 and over | 41 | 1. 20 | . 94 | . 37 | . 02 | . 19 | . 32 | . 22 | . 29 | . 21 |
| BUFFALO | | | | | | | | | | |
| All incomes | [1] 254 | 1. 08 | . 56 | . 47 | . 02 | . 22 | . 29 | . 20 | . 27 | . 21 |
| 0–1,999 | 22 | . 99 | . 59 | . 38 | . 02 | . 20 | . 21 | . 25 | . 24 | . 19 |
| 2,000–2,999 | 92 | 1. 01 | . 56 | . 46 | . 03 | . 23 | . 25 | . 20 | . 29 | . 22 |
| 3,000–3,999 | 73 | 1. 18 | . 55 | . 49 | . 01 | . 22 | . 27 | . 18 | . 24 | . 21 |
| 4,000–5,999 | 44 | 1. 02 | . 47 | . 51 | . 01 | . 22 | . 37 | . 22 | . 24 | . 20 |
| 6,000 and over | 7 | 1. 00 | . 83 | . 61 | . 03 | . 18 | . 40 | . 16 | . 74 | . 20 |
| MINNEAPOLIS-ST. PAUL | | | | | | | | | | |
| All incomes | [1] 245 | 1. 25 | . 59 | . 37 | . 01 | . 20 | . 32 | . 18 | . 38 | . 19 |
| 0–1,999 | 22 | 1. 10 | . 54 | . 28 | [2] | . 12 | . 26 | . 12 | . 41 | . 20 |
| 2,000–2,999 | 61 | 1. 30 | . 59 | . 35 | . 02 | . 23 | . 24 | . 19 | . 32 | . 19 |
| 3,000–3,999 | 68 | 1. 42 | . 55 | . 38 | . 02 | . 18 | . 40 | . 16 | . 41 | . 20 |
| 4,000–5,999 | 58 | 1. 27 | . 59 | . 34 | . 01 | . 21 | . 32 | . 19 | . 44 | . 19 |
| 6,000 and over | 26 | . 98 | . 66 | . 52 | [2] | . 26 | . 33 | . 24 | . 28 | . 19 |
| SAN FRANCISCO | | | | | | | | | | |
| All incomes | [1] 277 | 1. 39 | . 66 | . 44 | . 02 | . 18 | . 33 | . 30 | . 44 | . 18 |
| 0–1,999 | 14 | 1. 96 | . 82 | . 24 | . 04 | . 17 | . 31 | . 27 | . 35 | . 19 |
| 2,000–2,999 | 61 | 1. 42 | . 65 | . 44 | . 01 | . 21 | . 32 | . 34 | . 42 | . 17 |
| 3,000–3,999 | 82 | 1. 40 | . 62 | . 44 | . 01 | . 21 | . 25 | . 29 | . 46 | . 18 |
| 4,000–5,999 | 56 | 1. 36 | . 71 | . 48 | . 04 | . 14 | . 41 | . 25 | . 44 | . 20 |
| 6,000 and over | 30 | 1. 39 | . 82 | . 51 | [2] | . 14 | . 49 | . 36 | . 48 | . 15 |

[1] Includes homemakers in families not classified by income, not shown separately.

[2] 0.005 pound or less.

NOTE: See Methodology, Calculation of food quantities, pp. 56 and 58.

## TABLE 11.—NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Averages per homemaker, by income, 4 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| City and family income in 1947 (dollars) | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Not adjusted for nutrient losses in cooking | | | | Adjusted for nutrient losses in cooking [1] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Thiamine | Riboflavin | Niacin | Ascorbic acid | Thiamine | Riboflavin | Niacin | Ascorbic acid |
| | *Number* | *Calories* | *Grams* | *Grams* | *Milligrams* | *International Units* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* |
| **BIRMINGHAM** | | | | | | | | | | | | | | |
| All incomes | [2] 261 | 1,820 | 57 | 0.61 | 11.9 | 8,570 | 1.23 | 1.48 | 12.1 | 92 | 1.02 | 1.37 | 10.9 | 64 |
| 0–999 | 19 | 1,420 | 36 | .48 | 10.0 | 8,810 | 1.01 | 1.01 | 6.2 | 92 | .88 | .92 | 5.7 | 58 |
| 1,000–1,999 | 51 | 1,720 | 55 | .60 | 12.4 | 9,320 | 1.23 | 1.68 | 13.0 | 89 | 1.01 | 1.57 | 11.7 | 59 |
| 2,000–2,999 | 82 | 1,780 | 57 | .63 | 11.6 | 7,870 | 1.21 | 1.31 | 11.2 | 92 | 1.00 | 1.21 | 10.1 | 59 |
| 3,000–3,999 | 52 | 1,900 | 59 | .62 | 11.5 | 6,920 | 1.18 | 1.46 | 12.1 | 86 | .97 | 1.34 | 11.0 | 63 |
| 4,000 and over | 41 | 1,950 | 66 | .66 | 13.5 | 11,780 | 1.27 | 1.86 | 15.3 | 111 | 1.05 | 1.72 | 14.0 | 82 |
| **BUFFALO** | | | | | | | | | | | | | | |
| All incomes | [2] 254 | 1,730 | 67 | .54 | 11.7 | 6,380 | 1.21 | 1.42 | 14.3 | 81 | .99 | 1.35 | 12.8 | 62 |
| 0–1,999 | 22 | 1,510 | 57 | .51 | 10.9 | 9,000 | 1.18 | 1.41 | 13.6 | 66 | [3] | [3] | [3] | [3] |
| 2,000–2,999 | 93 | 1,760 | 67 | .55 | 12.0 | 6,190 | 1.17 | 1.32 | 13.6 | 83 | [3] | [3] | [3] | [3] |
| 3,000–3,999 | 75 | 1,750 | 68 | .53 | 11.3 | 6,010 | 1.23 | 1.51 | 14.7 | 75 | [3] | [3] | [3] | [3] |
| 4,000–5,999 | 44 | 1,730 | 67 | .52 | 11.9 | 6,590 | 1.28 | 1.38 | 14.6 | 91 | [3] | [3] | [3] | [3] |
| 6,000 and over | 7 | 2,210 | 86 | .66 | 16.3 | 5,880 | 1.49 | 1.70 | 19.0 | 95 | [3] | [3] | [3] | [3] |
| **MINNEAPOLIS-ST. PAUL** | | | | | | | | | | | | | | |
| All incomes | [2] 245 | 1,720 | 61 | .58 | 10.5 | 6,340 | 1.14 | 1.35 | 12.7 | 80 | .94 | 1.29 | 11.4 | 66 |
| 0–1,999 | 22 | 1,500 | 49 | .50 | 8.3 | 4,920 | .99 | 1.06 | 9.9 | 63 | .82 | 1.02 | 8.9 | 51 |
| 2,000–2,999 | 61 | 1,700 | 61 | .60 | 10.1 | 5,560 | 1.12 | 1.27 | 12.8 | 61 | .96 | 1.23 | 11.4 | 48 |
| 3,000–3,999 | 68 | 1,800 | 63 | .65 | 10.9 | 5,760 | 1.22 | 1.42 | 12.6 | 93 | 1.01 | 1.35 | 11.4 | 76 |
| 4,000–5,999 | 58 | 1,690 | 60 | .55 | 11.0 | 7,680 | 1.07 | 1.46 | 12.8 | 84 | .87 | 1.39 | 11.6 | 66 |
| 6,000 and over | 26 | 1,780 | 67 | .55 | 11.6 | 8,520 | 1.28 | 1.46 | 15.7 | 95 | 1.02 | 1.38 | 13.7 | 76 |
| **SAN FRANCISCO** | | | | | | | | | | | | | | |
| All incomes | [2] 277 | 1,850 | 69 | .60 | 12.5 | 8,690 | 1.22 | 1.47 | 14.9 | 105 | .98 | 1.36 | 13.3 | 81 |
| 0–1,999 | 14 | 1,770 | 62 | .75 | 10.8 | 9,910 | 1.23 | 1.59 | 12.1 | 116 | [3] | [3] | [3] | [3] |
| 2,000–2,999 | 61 | 1,780 | 68 | .60 | 12.8 | 9,420 | 1.22 | 1.52 | 15.4 | 111 | [3] | [3] | [3] | [3] |
| 3,000–3,999 | 82 | 1,850 | 69 | .58 | 12.1 | 8,770 | 1.18 | 1.49 | 15.5 | 90 | [3] | [3] | [3] | [3] |
| 4,000–5,999 | 56 | 2,040 | 77 | .61 | 13.6 | 6,720 | 1.33 | 1.48 | 15.6 | 102 | [3] | [3] | [3] | [3] |
| 6,000 and over | 30 | 1,870 | 70 | .59 | 11.9 | 7,650 | 1.30 | 1.31 | 14.6 | 123 | [3] | [3] | [3] | [3] |

[1] See Methodology, Nutrient losses in cooking, p. 60. [2] Includes homemakers in families not classified by income, not shown separately. [3] Not available.

TABLE 12.—SIZE OF HOUSEHOLD AND NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Averages per homemaker, selected income classes, 3 cities combined*

[Housekeeping families of 2 or more persons in Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Family income in 1947 (dollars) and household size (equivalent persons) [1] | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [2] | Riboflavin [2] | Niacin [2] | Ascorbic acid [2] |
|---|---|---|---|---|---|---|---|---|---|---|
| All incomes: | *Number* | *Calories* | *Grams* | *Grams* | *Milligrams* | *International Units* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* |
| 2 persons | 242 | 1,730 | 65 | 0.56 | 11.5 | 7,920 | 1.14 | 1.43 | 14.3 | 99 |
| 3 persons | 212 | 1,830 | 69 | .61 | 11.7 | 6,660 | 1.19 | 1.41 | 14.3 | 96 |
| 4 persons | 158 | 1,750 | 64 | .57 | 11.3 | 6,500 | 1.16 | 1.33 | 13.1 | 76 |
| 5 or more | 164 | 1,750 | 65 | .55 | 11.8 | 7,480 | 1.30 | 1.49 | 14.1 | 77 |
| 2,000–2,999: | | | | | | | | | | |
| 2 persons | 57 | 1,640 | 64 | .54 | 11.7 | 9,440 | 1.08 | 1.48 | 15.1 | 89 |
| 3 persons | 80 | 1,810 | 67 | .59 | 11.9 | 6,590 | 1.18 | 1.35 | 13.9 | 99 |
| 4 persons | 39 | 1,790 | 66 | .61 | 11.7 | 4,210 | 1.17 | 1.26 | 12.1 | 62 |
| 5 or more | 39 | 1,740 | 67 | .57 | 11.2 | 6,670 | 1.28 | 1.33 | 13.7 | 71 |
| 3,000–3,999: | | | | | | | | | | |
| 2 persons | 60 | 1,730 | 64 | .57 | 11.3 | 5,870 | 1.16 | 1.44 | 14.7 | 103 |
| 3 persons | 56 | 1,970 | 75 | .66 | 11.5 | 6,670 | 1.16 | 1.48 | 14.9 | 81 |
| 4 persons | 58 | 1,720 | 64 | .55 | 11.5 | 7,120 | 1.21 | 1.40 | 13.8 | 79 |
| 5 or more | 51 | 1,800 | 63 | .57 | 11.6 | 8,290 | 1.31 | 1.59 | 14.0 | 78 |
| 4,000–5,999: | | | | | | | | | | |
| 2 persons | 47 | 1,900 | 69 | .61 | 12.2 | 7,330 | 1.25 | 1.41 | 13.8 | 105 |
| 3 persons | 34 | 1,680 | 65 | .53 | 11.4 | 5,390 | 1.15 | 1.30 | 14.2 | 87 |
| 4 persons | 32 | 1,910 | 67 | .57 | 11.3 | 7,710 | 1.12 | 1.32 | 13.9 | 88 |
| 5 or more | 45 | 1,800 | 68 | .54 | 13.2 | 7,500 | 1.32 | 1.67 | 15.3 | 86 |

[1] See Glossary, Household size in equivalent persons, p. 67.
[2] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 13.—AGE OF HOMEMAKER AND NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Averages per homemaker, selected income classes, 3 cities combined*

[Housekeeping families of 2 or more persons in Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter, 1948]

| Family income in 1947 (dollars) and age of homemaker | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Number* | *Calories* | *Grams* | *Grams* | *Milligrams* | *International Units* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* |
| All incomes: | | | | | | | | | | |
| 29 years and under | 163 | 1,880 | 70 | 0.68 | 11.5 | 6,980 | 1.24 | 1.55 | 13.8 | 93 |
| 30–39 years | 217 | 1,900 | 69 | .61 | 12.0 | 6,460 | 1.26 | 1.42 | 14.2 | 79 |
| 40–49 years | 175 | 1,720 | 64 | .54 | 11.7 | 7,760 | 1.18 | 1.45 | 14.0 | 93 |
| 50–59 years | 137 | 1,600 | 60 | .48 | 11.9 | 8,890 | 1.12 | 1.33 | 14.1 | 101 |
| 60 years and over | 84 | 1,630 | 63 | .55 | 10.3 | 5,800 | 1.07 | 1.28 | 14.3 | 87 |
| 2,000–2,999: | | | | | | | | | | |
| 29 years and under | 57 | 1,860 | 70 | .69 | 11.5 | 7,050 | 1.15 | 1.50 | 14.1 | 95 |
| 30–39 years | 59 | 1,890 | 69 | .56 | 12.3 | 5,620 | 1.29 | 1.32 | 13.7 | 68 |
| 40–49 years | 39 | 1,580 | 65 | .55 | 11.1 | 6,210 | 1.07 | 1.29 | 13.5 | 93 |
| 50–59 years | 41 | 1,650 | 61 | .51 | 12.7 | 10,410 | 1.22 | 1.44 | 14.5 | 100 |
| 60 years and over | 19 | 1,550 | 56 | .48 | 9.1 | 4,560 | .96 | 1.09 | 13.2 | 52 |
| 3,000–3,999: | | | | | | | | | | |
| 29 years and under | 59 | 1,880 | 66 | .66 | 10.9 | 5,810 | 1.24 | 1.55 | 13.3 | 92 |
| 30–39 years | 72 | 1,900 | 71 | .60 | 12.2 | 7,790 | 1.28 | 1.46 | 15.0 | 80 |
| 40–49 years | 51 | 1,840 | 68 | .57 | 12.9 | 8,940 | 1.24 | 1.66 | 15.8 | 94 |
| 50–59 years | 26 | 1,360 | 53 | .41 | 8.8 | 3,680 | .93 | .99 | 11.3 | 57 |
| 60 years and over | 17 | 1,660 | 65 | .61 | 10.3 | 6,250 | 1.12 | 1.44 | 16.1 | 108 |
| 4,000–5,999: | | | | | | | | | | |
| 29 years and under | 19 | 2,100 | 82 | .72 | 14.5 | 9,960 | 1.58 | 1.80 | 15.2 | 96 |
| 30–39 years | 48 | 1,880 | 68 | .60 | 12.1 | 5,970 | 1.27 | 1.42 | 14.6 | 90 |
| 40–49 years | 49 | 1,730 | 63 | .52 | 11.1 | 6,060 | 1.20 | 1.32 | 13.2 | 82 |
| 50–59 years | 30 | 1,790 | 68 | .50 | 13.2 | 8,800 | 1.09 | 1.53 | 15.9 | 99 |
| 60 years and over | 12 | 1,630 | 64 | .54 | 10.4 | 6,270 | .92 | 1.26 | 12.4 | 126 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 14.—EDUCATION OF HOMEMAKER AND NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Averages per homemaker, selected income classes, 3 cities combined*

[Housekeeping families of 2 or more persons in Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter, 1948]

| Family income in 1947 (dollars) and education of homemaker | Homemakers [1] | Average household size in equivalent persons [2] | Average age of homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [3] | Riboflavin [3] | Niacin [3] | Ascorbic acid [3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Number* | *Number* | *Years* | *Calories* | *Grams* | *Grams* | *Milligrams* | *International Units* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* |
| All incomes: | | | | | | | | | | | | |
| Elementary school | 239 | 3.57 | 47 | 1,670 | 64 | 0.50 | 11.4 | 6,650 | 1.16 | 1.36 | 14.4 | 74 |
| High school | 387 | 3.44 | 39 | 1,770 | 65 | .58 | 11.4 | 7,100 | 1.17 | 1.38 | 13.7 | 92 |
| College | 148 | 3.29 | 39 | 1,900 | 70 | .68 | 12.5 | 8,200 | 1.30 | 1.59 | 14.4 | 107 |
| 2,000–2,999: | | | | | | | | | | | | |
| Elementary school | 81 | 3.37 | 44 | 1,750 | 67 | .53 | 11.7 | 6,430 | 1.20 | 1.34 | 14.5 | 83 |
| High school | 109 | 3.41 | 37 | 1,710 | 64 | .59 | 11.5 | 7,220 | 1.08 | 1.36 | 13.3 | 84 |
| College | 24 | 2.83 | 39 | 1,960 | 72 | .70 | 12.4 | 6,390 | 1.48 | 1.49 | 14.2 | 95 |
| 3,000–3,999: | | | | | | | | | | | | |
| Elementary school | 62 | 4.00 | 44 | 1,750 | 69 | .48 | 12.2 | 6,590 | 1.22 | 1.56 | 17.2 | 54 |
| High school | 122 | 3.55 | 38 | 1,760 | 63 | .59 | 10.9 | 6,850 | 1.17 | 1.38 | 12.9 | 96 |
| College | 40 | 3.42 | 34 | 2,000 | 74 | .75 | 12.3 | 7,800 | 1.31 | 1.62 | 14.6 | 105 |
| 4,000–5,999: | | | | | | | | | | | | |
| Elementary school | 31 | 3.77 | 49 | 1,740 | 68 | .46 | 11.3 | 6,180 | 1.06 | 1.29 | 13.8 | 76 |
| High school | 89 | 3.69 | 39 | 1,880 | 68 | .58 | 12.1 | 6,330 | 1.28 | 1.38 | 14.4 | 92 |
| College | 38 | 3.45 | 44 | 1,770 | 66 | .61 | 13.0 | 9,400 | 1.21 | 1.72 | 14.4 | 107 |

[1] Excludes homemakers for whom no report of years of schooling was obtained.
[2] See Glossary, Household size in equivalent persons, p. 67.
[3] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 15.—EMPLOYMENT OF HOMEMAKER AND NUTRITIVE CONTENT OF FOOD FOR 1 DAY: *Averages per homemaker, selected income classes, 3 cities combined*

[Housekeeping families of 2 or more persons in Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| Family income in 1947 (dollars) and employment of homemaker | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Number* | *Calories* | *Grams* | *Grams* | *Milligrams* | *International Units* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* |
| All incomes: | | | | | | | | | | |
| Employed | 139 | 1, 780 | 66 | 0. 54 | 11. 7 | 7, 540 | 1. 22 | 1. 36 | 14. 0 | 96 |
| Not employed | 637 | 1, 940 | 66 | . 58 | 11. 6 | 7, 120 | 1. 18 | 1. 43 | 14. 0 | 88 |
| 2,000–2,999: | | | | | | | | | | |
| Employed | 35 | 1, 780 | 70 | . 56 | 12. 1 | 7, 750 | 1. 33 | 1. 31 | 14. 8 | 97 |
| Not employed | 180 | 1, 750 | 65 | . 58 | 11. 6 | 6, 770 | 1. 14 | 1. 37 | 13. 7 | 82 |
| 3,000–3,999: | | | | | | | | | | |
| Employed | 29 | 1, 710 | 60 | . 42 | 11. 0 | 5, 560 | 1. 08 | 1. 31 | 14. 9 | 89 |
| Not employed | 196 | 1, 820 | 68 | . 61 | 11. 5 | 7, 140 | 1. 23 | 1. 50 | 14. 3 | 85 |
| 4,000–5,999: | | | | | | | | | | |
| Employed | 43 | 1, 850 | 72 | . 59 | 12. 3 | 7, 580 | 1. 32 | 1. 44 | 14. 5 | 100 |
| Not employed | 115 | 1, 820 | 66 | . 56 | 12. 1 | 6, 830 | 1. 18 | 1. 44 | 14. 2 | 90 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 16.—CONTRIBUTION OF EACH MEAL TO NUTRITIVE CONTENT OF DAY'S FOOD: *By income, 2 cities*

[Homemakers in housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| City, family income in 1947 (dollars), and meal of day | Food energy | Protein | Calcium | Iron | Vitamin A value | Not adjusted for nutrient losses in cooking | | | | Adjusted for nutrient losses in cooking [1] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Thiamine | Riboflavin | Niacin | Ascorbic acid | Thiamine | Riboflavin | Niacin | Ascorbic acid |
| BIRMINGHAM | | | | | | | | | | | | | |
| All incomes: [2] [3] | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Morning meal | 28 | 23 | 23 | 26 | 12 | 24 | 24 | 19 | 14 | 25 | 27 | 19 | 18 |
| Noon meal | 27 | 28 | 31 | 26 | 28 | 27 | 30 | 29 | 24 | 28 | 31 | 29 | 24 |
| Evening meal | 40 | 45 | 43 | 45 | 59 | 47 | 43 | 50 | 58 | 45 | 40 | 50 | 52 |
| Between meals | 5 | 4 | 3 | 3 | 1 | 2 | 3 | 2 | 4 | 2 | 2 | 2 | 6 |
| 0–999: [3] | | | | | | | | | | | | | |
| Morning meal | 33 | 22 | 21 | 31 | 6 | 20 | 22 | 23 | 1 | 20 | 24 | 23 | 2 |
| Noon meal | 20 | 25 | 29 | 17 | 15 | 23 | 27 | 21 | 16 | 22 | 27 | 23 | 21 |
| Evening meal | 47 | 53 | 50 | 52 | 79 | 57 | 51 | 56 | 83 | 58 | 49 | 54 | 77 |
| Between meals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1,000–1,999: [3] | | | | | | | | | | | | | |
| Morning meal | 32 | 29 | 28 | 32 | 23 | 30 | 35 | 29 | 8 | 34 | 37 | 29 | 12 |
| Noon meal | 22 | 24 | 23 | 19 | 11 | 22 | 17 | 19 | 16 | 23 | 17 | 20 | 19 |
| Evening meal | 42 | 45 | 47 | 47 | 65 | 46 | 47 | 51 | 72 | 40 | 45 | 50 | 64 |
| Between meals | 4 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 4 | 3 | 1 | 1 | 5 |
| 2,000–2,999: [3] | | | | | | | | | | | | | |
| Morning meal | 30 | 23 | 27 | 29 | 11 | 26 | 26 | 18 | 13 | 26 | 27 | 17 | 20 |
| Noon meal | 23 | 25 | 29 | 19 | 21 | 20 | 25 | 23 | 20 | 21 | 27 | 24 | 24 |
| Evening meal | 43 | 50 | 41 | 50 | 67 | 52 | 47 | 57 | 63 | 51 | 44 | 57 | 49 |
| Between meals | 4 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 4 | 2 | 2 | 2 | 7 |
| 3,000–3,999: [3] | | | | | | | | | | | | | |
| Morning meal | 28 | 22 | 21 | 23 | 11 | 25 | 22 | 17 | 24 | 25 | 23 | 17 | 31 |
| Noon meal | 30 | 31 | 36 | 30 | 39 | 31 | 35 | 31 | 31 | 30 | 35 | 33 | 28 |
| Evening meal | 34 | 40 | 36 | 43 | 49 | 40 | 38 | 47 | 39 | 40 | 38 | 45 | 34 |
| Between meals | 8 | 7 | 7 | 4 | 1 | 4 | 5 | 5 | 6 | 5 | 4 | 5 | 7 |
| 4,000 and over: [3] | | | | | | | | | | | | | |
| Morning meal | 20 | 17 | 15 | 17 | 7 | 18 | 15 | 10 | 19 | 19 | 16 | 12 | 23 |
| Noon meal | 35 | 39 | 36 | 42 | 50 | 41 | 48 | 45 | 35 | 39 | 48 | 45 | 34 |
| Evening meal | 41 | 41 | 41 | 39 | 42 | 39 | 34 | 42 | 40 | 38 | 33 | 41 | 34 |
| Between meals | 4 | 3 | 8 | 2 | 1 | 2 | 3 | 3 | 6 | 4 | 3 | 2 | 9 |

| MINNEAPOLIS-ST. PAUL | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All incomes: [2] [3] | | | | | | | | | | | | | |
| Morning meal | 18 | 13 | 22 | 15 | 10 | 17 | 18 | 9 | 38 | 20 | 19 | 11 | 46 |
| Noon meal | 29 | 31 | 34 | 30 | 29 | 28 | 34 | 31 | 19 | 29 | 35 | 32 | 17 |
| Evening meal | 45 | 51 | 34 | 51 | 59 | 51 | 41 | 57 | 39 | 46 | 40 | 54 | 32 |
| Between meals | 8 | 5 | 10 | 4 | 2 | 4 | 7 | 3 | 4 | 5 | 6 | 3 | 5 |
| 0–1,999: [3] | | | | | | | | | | | | | |
| Morning meal | 23 | 16 | 25 | 20 | 12 | 18 | 22 | 12 | 39 | 21 | 23 | 14 | 44 |
| Noon meal | 31 | 35 | 34 | 31 | 30 | 36 | 35 | 32 | 15 | 36 | 34 | 32 | 13 |
| Evening meal | 38 | 43 | 29 | 45 | 54 | 43 | 35 | 50 | 44 | 41 | 35 | 48 | 43 |
| Between meals | 8 | 6 | 12 | 4 | 4 | 3 | 8 | 6 | 2 | 2 | 8 | 6 | [4] |
| 2,000–2,999: [3] | | | | | | | | | | | | | |
| Morning meal | 18 | 15 | 20 | 17 | 15 | 17 | 21 | 11 | 36 | 19 | 21 | 12 | 43 |
| Noon meal | 28 | 30 | 33 | 27 | 20 | 24 | 30 | 28 | 18 | 26 | 31 | 27 | 17 |
| Evening meal | 44 | 47 | 32 | 50 | 62 | 49 | 38 | 57 | 43 | 43 | 37 | 57 | 38 |
| Between meals | 10 | 8 | 15 | 6 | 3 | 10 | 11 | 4 | 3 | 12 | 11 | 4 | 2 |
| 3,000–3,999: [3] | | | | | | | | | | | | | |
| Morning meal | 18 | 14 | 24 | 15 | 10 | 17 | 18 | 10 | 42 | 20 | 20 | 12 | 51 |
| Noon meal | 30 | 35 | 35 | 33 | 41 | 31 | 38 | 35 | 16 | 32 | 38 | 35 | 15 |
| Evening meal | 45 | 46 | 33 | 48 | 46 | 49 | 38 | 50 | 35 | 43 | 37 | 48 | 29 |
| Between meals | 7 | 5 | 8 | 4 | 3 | 3 | 6 | 4 | 7 | 5 | 5 | 5 | 5 |
| 4,000–5,999: [3] | | | | | | | | | | | | | |
| Morning meal | 18 | 12 | 18 | 14 | 9 | 15 | 14 | 9 | 35 | 18 | 14 | 10 | 37 |
| Noon meal | 28 | 28 | 34 | 29 | 32 | 27 | 35 | 27 | 17 | 31 | 34 | 27 | 19 |
| Evening meal | 47 | 57 | 39 | 53 | 57 | 55 | 46 | 62 | 41 | 47 | 48 | 61 | 36 |
| Between meals | 7 | 3 | 9 | 4 | 2 | 3 | 5 | 2 | 7 | 4 | 4 | 2 | 8 |
| 6,000 and over: [3] | | | | | | | | | | | | | |
| Morning meal | 18 | 12 | 17 | 14 | 9 | 15 | 14 | 8 | 38 | 17 | 15 | 7 | 45 |
| Noon meal | 30 | 34 | 38 | 32 | 12 | 24 | 29 | 34 | 21 | 26 | 29 | 35 | 20 |
| Evening meal | 47 | 51 | 38 | 52 | 78 | 59 | 52 | 57 | 41 | 54 | 52 | 57 | 35 |
| Between meals | 5 | 3 | 7 | 2 | 1 | 2 | 5 | 1 | [4] | 3 | 4 | 1 | [4] |

[1] See Methodology, Nutrient losses in cooking, p. 60.
[2] Includes homemakers in families not classified by income, not shown separately.
[3] See table 11 for number of homemakers included in each income class and for nutrient content of total day's diet.
[4] 0.5 percent or less.

TABLE 17.—PROPORTION OF TOTAL DAY'S QUANTITIES OF SELECTED FOODS EATEN AT EACH MEAL: *Average quantities eaten per homemaker in a day and proportion eaten at each meal, 2 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| City and meal of day | Milk, cream, ice cream, cheese | | | | Bacon, salt pork | Eggs | Meat, poultry, fish | | | | | | Dry beans and peas, nuts | Potatoes, sweet potatoes | Leafy, green, and yellow vegetables |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total milk equivalent [1] | Fluid milk | | Ice cream | | | Total [1] | Beef | Pork (excluding bacon, salt pork) | Lunch meats | Poultry | Fish | | | |
| | | Whole milk | Buttermilk | | | | | | | | | | | | |
| | Average quantity per homemaker in a day [2] | | | | | | | | | | | | | | |
| BIRMINGHAM | | | | | | | | | | | | | | | |
| All meals | *Cups* 1. 11 | *Cup* 0. 54 | *Cup* 0. 22 | *Pound* 0. 01 | *Pound* 0. 05 | *Number* 0. 72 | *Pound* 0. 31 | *Pound* 0. 09 | *Pound* 0. 09 | *Pound* 0. 02 | *Pound* 0. 03 | *Pound* 0. 03 | *Pound* 0. 04 | *Pound* 0. 18 | *Pound* 0. 17 |
| | Proportion eaten at each meal [2] | | | | | | | | | | | | | | |
| Morning meal | *Percent* 23 | *Percent* 21 | *Percent* 13 | *Percent* 0 | *Percent* 41 | *Percent* 70 | *Percent* 13 | *Percent* 3 | *Percent* 28 | *Percent* 21 | *Percent* 2 | *Percent* 15 | *Percent* 1 | *Percent* [3] | *Percent* 1 |
| Noon meal | 35 | 38 | 39 | 4 | 21 | 14 | 26 | 27 | 22 | 40 | 27 | 15 | 31 | 29 | 25 |
| Evening meal | 37 | 36 | 46 | 80 | 37 | 14 | 59 | 69 | 49 | 28 | 69 | 70 | 67 | 71 | 74 |
| Between meals | 5 | 5 | 2 | 16 | 1 | 2 | 2 | 1 | 1 | 11 | 2 | 0 | 1 | 0 | [3] |
| | Average quantity per homemaker in a day | | | | | | | | | | | | | | |
| MINNEAPOLIS-ST. PAUL | | | | | | | | | | | | | | | |
| All meals | *Cups* 1. 25 | *Cup* 0. 79 | *Cup* [4] | *Pound* 0. 03 | *Pound* 0. 02 | *Number* 0. 59 | *Pound* 0. 37 | *Pound* 0. 12 | *Pound* 0. 09 | *Pound* 0. 03 | *Pound* 0. 02 | *Pound* 0. 02 | *Pound* 0. 01 | *Pound* 0. 20 | *Pound* 0. 18 |
| | Proportion eaten at each meal | | | | | | | | | | | | | | |
| Morning meal | *Percent* 20 | *Percent* 27 | *Percent* [5] | *Percent* 0 | *Percent* 52 | *Percent* 44 | *Percent* 1 | *Percent* 0 | *Percent* 1 | *Percent* 5 | *Percent* 0 | *Percent* 0 | *Percent* 1 | *Percent* 0 | *Percent* 0 |
| Noon meal | 41 | 36 | [5] | 42 | 20 | 27 | 29 | 20 | 24 | 49 | 27 | 17 | 49 | 17 | 18 |
| Evening meal | 28 | 26 | [5] | 37 | 28 | 27 | 69 | 79 | 74 | 42 | 69 | 79 | 46 | 82 | 82 |
| Between meals | 11 | 11 | [5] | 21 | 0 | 2 | 1 | 1 | 1 | 4 | 4 | 4 | 4 | 1 | [3] |

| City and meal of day | Citrus fruits, tomatoes | | | | | | Other vegetables and fruits | | | Sirups, molasses, honey | Soft drinks | Grain products | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total [1] | Citrus fruits | | Tomatoes | | | Total | Other vegetables | Other fruits | | | Total flour equivalent [1] | Bread | Other baked goods | Flour, flour mixes, corn meal | Cereals, uncooked, and ready-to-eat |
| | | Fresh | Canned, juice | Fresh | Canned pulp | Juice | | | | | | | | | | |
| | Average quantity per homemaker in a day [2] | | | | | | | | | | | | | | | |
| BIRMINGHAM | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* | *Pound* |
| All meals | 0. 18 | 0. 10 | 0. 03 | 0. 02 | 0. 01 | 0. 02 | 0. 22 | 0. 07 | 0. 15 | 0. 02 | 0. 10 | 0. 22 | 0. 11 | 0. 07 | 0. 08 | 0. 01 |
| | Proportion eaten at each meal | | | | | | | | | | | | | | | |
| | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Morning meal | 45 | 56 | 59 | 0 | 4 | 54 | 4 | 1 | 3 | 90 | 7 | 34 | 41 | 3 | 36 | 74 |
| Noon meal | 25 | 15 | 28 | 47 | 44 | 26 | 38 | 46 | 36 | 5 | 23 | 28 | 29 | 49 | 21 | 12 |
| Evening meal | 17 | 7 | 8 | 53 | 52 | 20 | 48 | 53 | 46 | [3] | 35 | 34 | 24 | 42 | 42 | 3 |
| Between meals | 13 | 22 | 5 | 0 | 0 | 0 | 10 | [3] | 15 | 5 | 35 | 4 | 6 | 6 | 1 | 11 |

See footnotes at end of table, p. 42.

TABLE 17.—PROPORTION OF TOTAL DAY'S QUANTITIES OF SELECTED FOODS EATEN AT EACH MEAL: *Average quantities eaten per homemaker in a day and proportion eaten at each meal, 2 cities*—Continued

[Housekeeping families of 2 or more persons in Birmingham, Ala. and Minneapolis-St. Paul, Minn., winter 1948]

| City and meal of day | Citrus fruits, tomatoes | | | | | | Other vegetables and fruits | | | Sirups, molasses, honey | Soft drinks | Grain products | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total [1] | Citrus fruits | | Tomatoes | | | Total | Other vegetables | Other fruits | | | Total flour equivalent [1] | Bread | Other baked goods | Flour, flour mixes, corn meal | Cereals, uncooked, and ready-to-eat |
| | | Fresh | Canned, juice | Fresh | Canned pulp | Juice | | | | | | | | | | |
| MINNEAPOLIS-ST. PAUL | Average quantity per homemaker in a day [2] | | | | | | | | | | | | | | | |
| All meals | *Pound* 0. 32 | *Pound* 0. 22 | *Pound* 0. 03 | *Pound* 0. 01 | *Pound* 0. 02 | *Pound* 0. 03 | *Pound* 0. 38 | *Pound* 0. 16 | *Pound* 0. 22 | *Pound* 0. 10 | *Pound* 0. 03 | *Pound* 0. 19 | *Pound* 0. 15 | *Pound* 0. 16 | *Pound* 0. 02 | *Pound* 0. 02 |
| | Proportion eaten at each meal | | | | | | | | | | | | | | | |
| Morning meal | *Percent* 65 | *Percent* 76 | *Percent* 93 | *Percent* 0 | *Percent* 2 | *Percent* 63 | *Percent* 8 | *Percent* 2 | *Percent* 12 | *Percent* 33 | *Percent* 0 | *Percent* 27 | *Percent* 35 | *Percent* 7 | *Percent* 17 | *Percent* 85 |
| Noon meal | 14 | 10 | 4 | 19 | 43 | 13 | 36 | 35 | 36 | 33 | 6 | 32 | 37 | 29 | 33 | 3 |
| Evening meal | 15 | 6 | 3 | 80 | 55 | 20 | 48 | 62 | 38 | 23 | 18 | 33 | 24 | 50 | 44 | 1 |
| Between meals | 6 | 8 | 0 | 1 | 0 | 4 | 8 | 1 | 14 | 11 | 76 | 8 | 4 | 14 | 6 | 11 |

[1] Includes items not shown separately.
[2] Averages based on total number of homemakers for each city: 261 in Birmingham and 245 in Minneapolis-St. Paul.
[3] 0.5 percent or less.
[4] 0.005 pound or less.
[5] Percents not shown because of too few cases.

NOTE: See Methodology, Calculation of food quantities, pp. 56 and 58.

TABLE 18.—PERCENT OF HOMEMAKERS CONSUMING ANY OF SELECTED FOODS DURING DAY AND AT EACH MEAL OF DAY: *2 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| Food group and selected food | Birmingham [1] | | | | | Minneapolis-St. Paul [1] | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | During day | Morning meal | Noon meal | Evening meal | Between meals | During day | Morning meal | Noon meal | Evening meal | Between meals |
| | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Milk, cream, ice cream, cheese | 94 | 77 | 60 | 73 | 8 | 91 | 70 | 67 | 68 | 22 |
| Whole fluid milk | 54 | 29 | 32 | 31 | 4 | 72 | 51 | 41 | 41 | 11 |
| Buttermilk | 39 | 20 | 18 | 27 | (2) | (2) | (2) | (2) | (2) | 0 |
| Ice cream | 5 | 0 | (2) | 4 | 1 | 16 | 0 | 6 | 7 | 3 |
| Bacon, salt pork | 51 | 30 | 9 | 20 | (2) | 18 | 9 | 4 | 6 | 0 |
| Eggs | 66 | 49 | 18 | 24 | 2 | 50 | 27 | 16 | 21 | 2 |
| Meat, poultry, fish | 78 | 19 | 37 | 61 | 3 | 90 | 1 | 44 | 80 | 4 |
| Beef | 31 | 1 | 11 | 23 | 1 | 38 | 0 | 11 | 32 | 1 |
| Pork (excluding bacon, salt pork) | 32 | 12 | 9 | 15 | (2) | 25 | (2) | 7 | 18 | 1 |
| Lunch meats | 14 | 3 | 7 | 3 | 2 | 18 | 1 | 12 | 7 | 1 |
| Poultry | 9 | (2) | 4 | 6 | (2) | 4 | 0 | 2 | 3 | (2) |
| Fish | 10 | 2 | 3 | 7 | 0 | 11 | 0 | 4 | 8 | (2) |
| Dry beans and peas, nuts | 28 | 1 | 13 | 18 | 1 | 18 | 1 | 9 | 9 | 2 |
| Potatoes, sweetpotatoes | 56 | (2) | 18 | 41 | 0 | 65 | 0 | 13 | 58 | (2) |
| Citrus fruits, tomatoes | 38 | 15 | 19 | 20 | 5 | 62 | 46 | 14 | 21 | 4 |
| Citrus fruits, fresh | 21 | 10 | 6 | 6 | 4 | 40 | 32 | 4 | 5 | 3 |
| Citrus fruits, canned, juice | 5 | 4 | 2 | 1 | (2) | 10 | 10 | (2) | (2) | 0 |
| Tomatoes, fresh | 11 | 0 | 5 | 8 | 0 | 9 | 0 | 2 | 7 | (2) |
| Tomatoes, canned | 4 | (2) | 2 | 3 | 0 | 6 | (2) | 2 | 4 | 0 |
| Tomato juice | 4 | 2 | 2 | 1 | 0 | 8 | 5 | 1 | 2 | (2) |
| Green and yellow vegetables | 57 | (2) | 24 | 46 | 2 | 69 | 0 | 22 | 58 | 1 |
| Other vegetables and fruits | 59 | 3 | 35 | 42 | 7 | 82 | 13 | 43 | 64 | 8 |
| Soft drinks | 15 | 1 | 5 | 6 | 6 | 5 | 0 | (2) | 1 | 4 |
| Grain products | 100 | 89 | 78 | 87 | 10 | 100 | 88 | 87 | 85 | 26 |
| Bread | 66 | 48 | 31 | 28 | 5 | 92 | 70 | 64 | 48 | 7 |
| Other baked goods | 42 | 2 | 26 | 21 | 5 | 74 | 11 | 38 | 46 | 19 |
| Cereals, uncooked and ready-to-eat | 12 | 9 | 2 | 1 | 1 | 35 | 31 | 1 | 2 | 2 |

[1] Percents based on total number of homemakers in each city: 261 in Birmingham and 245 in Minneapolis-St. Paul.

[2] 0.5 percent or less.

NOTE.—See Methodology, Calculation of food quantities, pp. 56 and 58.

TABLE 19.—AGE OF HOMEMAKER AND CONTRIBUTION OF EACH MEAL TO NUTRITIVE CONTENT OF DAY'S FOOD: *2 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter, 1948]

| Age of homemaker and meal of day | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| BIRMINGHAM | *Number* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| 29 years and under | 54 | | | | | | | | | |
| Morning meal | | 25 | 21 | 25 | 27 | 11 | 26 | 25 | 18 | 19 |
| Noon meal | | 27 | 28 | 33 | 21 | 20 | 27 | 29 | 24 | 17 |
| Evening meal | | 43 | 47 | 39 | 48 | 68 | 45 | 43 | 54 | 61 |
| Between meals | | 5 | 4 | 3 | 4 | 1 | 2 | 3 | 4 | 3 |
| 30–39 years | 61 | | | | | | | | | |
| Morning meal | | 26 | 20 | 22 | 21 | 10 | 23 | 22 | 15 | 12 |
| Noon meal | | 26 | 30 | 32 | 26 | 27 | 27 | 31 | 28 | 23 |
| Evening meal | | 40 | 45 | 41 | 49 | 61 | 47 | 43 | 54 | 59 |
| Between meals | | 8 | 5 | 5 | 4 | 2 | 3 | 4 | 3 | 6 |
| 40–49 years | 73 | | | | | | | | | |
| Morning meal | | 28 | 23 | 22 | 27 | 14 | 20 | 23 | 20 | 12 |
| Noon meal | | 29 | 26 | 27 | 25 | 26 | 27 | 26 | 26 | 26 |
| Evening meal | | 39 | 47 | 46 | 46 | 59 | 51 | 48 | 52 | 58 |
| Between meals | | 4 | 4 | 5 | 2 | 1 | 2 | 3 | 2 | 4 |
| 50–59 years | 46 | | | | | | | | | |
| Morning meal | | 29 | 26 | 24 | 24 | 7 | 28 | 22 | 18 | 16 |
| Noon meal | | 27 | 31 | 31 | 34 | 39 | 27 | 39 | 38 | 35 |
| Evening meal | | 43 | 43 | 45 | 41 | 54 | 44 | 38 | 43 | 47 |
| Between meals | | 1 | [2] | [2] | 1 | [2] | 1 | 1 | 1 | 2 |
| 60 years and over | 27 | | | | | | | | | |
| Morning meal | | 36 | 31 | 30 | 39 | 23 | 34 | 39 | 30 | 15 |
| Noon meal | | 24 | 25 | 26 | 23 | 25 | 24 | 24 | 28 | 21 |
| Evening meal | | 36 | 40 | 37 | 36 | 51 | 39 | 34 | 40 | 54 |
| Between meals | | 4 | 4 | 7 | 2 | 1 | 3 | 3 | 2 | 10 |

| MINNEAPOLIS-ST. PAUL | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 29 years and under | 35 | | | | | | | | | |
| Morning meal | | 20 | 15 | 21 | 19 | 16 | 19 | 21 | 12 | 43 |
| Noon meal | | 28 | 32 | 35 | 30 | 19 | 22 | 33 | 29 | 18 |
| Evening meal | | 45 | 48 | 35 | 48 | 63 | 55 | 39 | 55 | 33 |
| Between meals | | 7 | 5 | 9 | 3 | 2 | 4 | 7 | 4 | 6 |
| 30–39 years | 75 | | | | | | | | | |
| Morning meal | | 16 | 12 | 22 | 14 | 10 | 14 | 17 | 10 | 35 |
| Noon meal | | 29 | 30 | 32 | 28 | 21 | 25 | 30 | 27 | 16 |
| Evening meal | | 45 | 50 | 32 | 53 | 66 | 53 | 43 | 60 | 42 |
| Between meals | | 10 | 8 | 14 | 5 | 3 | 8 | 10 | 3 | 7 |
| 40–49 years | 57 | | | | | | | | | 11 |
| Morning meal | | 20 | 15 | 23 | 15 | 9 | 18 | 19 | 9 | 35 |
| Noon meal | | 28 | 31 | 33 | 31 | 39 | 34 | 39 | 34 | 22 |
| Evening meal | | 43 | 49 | 38 | 51 | 50 | 45 | 38 | 53 | 38 |
| Between meals | | 9 | 5 | 6 | 3 | 2 | 3 | 4 | 4 | 5 |
| 50–59 years | 43 | | | | | | | | | |
| Morning meal | | 17 | 14 | 18 | 15 | 7 | 17 | 14 | 9 | 39 |
| Noon meal | | 28 | 29 | 33 | 30 | 25 | 26 | 32 | 29 | 16 |
| Evening meal | | 49 | 51 | 38 | 52 | 66 | 54 | 48 | 59 | 44 |
| Between meals | | 6 | 6 | 11 | 3 | 2 | 3 | 6 | 3 | 1 |
| 60 years and over | 35 | | | | | | | | | |
| Morning meal | | 21 | 14 | 26 | 18 | 19 | 18 | 21 | 10 | 48 |
| Noon meal | | 35 | 38 | 42 | 35 | 50 | 36 | 38 | 38 | 19 |
| Evening meal | | 41 | 46 | 28 | 46 | 30 | 45 | 38 | 51 | 33 |
| Between meals | | 3 | 2 | 4 | 1 | 1 | 1 | 3 | 1 | [2] |

[1] Not adjusted for nutrient losses in preparation and cooking of food.
[2] 0.5 percent or less.

TABLE 20.—EDUCATION OF HOMEMAKER AND CONTRIBUTION OF EACH MEAL TO NUTRITIVE CONTENT OF DAY'S FOOD: *2 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter, 1948]

| City, education of homemaker, and meal of day | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| BIRMINGHAM | *Number* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Elementary school | 118 | | | | | | | | | |
| Morning meal | | 32 | 27 | 25 | 33 | 12 | 28 | 29 | 25 | 4 |
| Noon meal | | 23 | 22 | 22 | 19 | 17 | 20 | 20 | 20 | 19 |
| Evening meal | | 42 | 49 | 51 | 47 | 71 | 51 | 49 | 53 | 76 |
| Between meals | | 3 | 2 | 2 | 1 | (2) | 1 | 2 | 2 | 1 |
| High school | 102 | | | | | | | | | |
| Morning meal | | 26 | 21 | 23 | 20 | 9 | 23 | 20 | 15 | 16 |
| Noon meal | | 28 | 30 | 35 | 31 | 42 | 29 | 37 | 34 | 31 |
| Evening meal | | 39 | 44 | 36 | 45 | 48 | 45 | 39 | 48 | 46 |
| Between meals | | 7 | 5 | 6 | 4 | 1 | 3 | 4 | 3 | 7 |
| College | 41 | | | | | | | | | |
| Morning meal | | 22 | 18 | 21 | 22 | 19 | 22 | 27 | 17 | 30 |
| Noon meal | | 33 | 35 | 35 | 31 | 25 | 39 | 34 | 32 | 23 |
| Evening meal | | 41 | 44 | 40 | 45 | 54 | 37 | 36 | 49 | 41 |
| Between meals | | 4 | 3 | 4 | 2 | 2 | 2 | 3 | 2 | 6 |
| MINNEAPOLIS-ST. PAUL | | | | | | | | | | |
| Elementary school [3] | 65 | | | | | | | | | |
| Morning meal | | 19 | 13 | 22 | 15 | 10 | 15 | 18 | 9 | 32 |
| Noon meal | | 31 | 31 | 35 | 32 | 28 | 35 | 37 | 31 | 19 |
| Evening meal | | 43 | 52 | 35 | 50 | 60 | 48 | 41 | 57 | 47 |
| Between meals | | 7 | 4 | 8 | 3 | 2 | 2 | 4 | 3 | 2 |
| High school | 118 | | | | | | | | | |
| Morning meal | | 19 | 15 | 23 | 16 | 13 | 17 | 20 | 10 | 35 |
| Noon meal | | 26 | 28 | 32 | 26 | 26 | 23 | 30 | 26 | 18 |
| Evening meal | | 46 | 50 | 32 | 54 | 58 | 54 | 42 | 61 | 39 |
| Between meals | | 9 | 7 | 13 | 4 | 3 | 6 | 8 | 3 | 8 |
| College | 61 | | | | | | | | | |
| Morning meal | | 17 | 12 | 19 | 14 | 8 | 18 | 14 | 9 | 47 |
| Noon meal | | 34 | 36 | 39 | 34 | 33 | 28 | 38 | 38 | 17 |
| Evening meal | | 42 | 48 | 36 | 48 | 57 | 50 | 43 | 50 | 34 |
| Between meals | | 7 | 4 | 6 | 4 | 2 | 4 | 5 | 3 | 2 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

[2] 0.5 percent or less.

[3] Excludes 1 homemaker from whom information on years of schooling was not obtained.

TABLE 21.—EMPLOYMENT OF HOMEMAKER AND CONTRIBUTION OF EACH MEAL TO NUTRITIVE CONTENT OF DAY'S FOOD: *2 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| City, employment of homemaker, and meal of day | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| BIRMINGHAM | *Number* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Employed | 31 | | | | | | | | | |
| Morning meal | | 26 | 19 | 14 | 20 | 10 | 19 | 17 | 15 | 9 |
| Noon meal | | 29 | 29 | 35 | 26 | 20 | 33 | 26 | 22 | 24 |
| Evening meal | | 40 | 49 | 45 | 52 | 68 | 46 | 53 | 61 | 61 |
| Between meals | | 5 | 3 | 6 | 2 | 2 | 2 | 4 | 2 | 6 |
| Not employed | 230 | | | | | | | | | |
| Morning meal | | 28 | 23 | 25 | 27 | 13 | 25 | 26 | 20 | 15 |
| Noon meal | | 27 | 28 | 30 | 26 | 29 | 26 | 30 | 30 | 24 |
| Evening meal | | 40 | 45 | 42 | 44 | 57 | 47 | 41 | 48 | 57 |
| Between meals | | 5 | 4 | 3 | 3 | 1 | 2 | 3 | 2 | 4 |
| MINNEAPOLIS-ST. PAUL | | | | | | | | | | |
| Employed | 40 | | | | | | | | | |
| Morning meal | | 18 | 13 | 21 | 14 | 10 | 17 | 16 | 10 | 34 |
| Noon meal | | 28 | 30 | 32 | 26 | 14 | 26 | 27 | 25 | 23 |
| Evening meal | | 44 | 50 | 40 | 54 | 74 | 51 | 52 | 60 | 39 |
| Between meals | | 10 | 7 | 7 | 6 | 2 | 6 | 5 | 5 | 4 |
| Not employed | 205 | | | | | | | | | |
| Morning meal | | 19 | 13 | 22 | 15 | 11 | 16 | 19 | 9 | 39 |
| Noon meal | | 29 | 31 | 34 | 30 | 32 | 28 | 35 | 32 | 18 |
| Evening meal | | 45 | 51 | 34 | 51 | 55 | 52 | 39 | 57 | 39 |
| Between meals | | 7 | 5 | 10 | 4 | 2 | 4 | 7 | 2 | 4 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

TABLE 22.—FOOD AT HOME AND AWAY FROM HOME: *Percent of all meals and proportion of nutritive content of day's total obtained from food at home and food away from home, by income, 2 cities*

[Homemakers in housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| Family income in 1947 (dollars) and source of food | Homemakers | Percent of all meals at home and away | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BIRMINGHAM | *Number* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| All incomes | [2] 261 | | | | | | | | | | |
| At home | | 95 | 94 | 93 | 93 | 92 | 91 | 94 | 91 | 92 | 95 |
| Away | | 5 | 6 | 7 | 7 | 8 | 9 | 6 | 9 | 8 | 5 |
| 0–999 | 19 | | | | | | | | | | |
| At home | | 93 | 96 | 92 | 90 | 96 | 99 | 97 | 92 | 92 | 97 |
| Away | | 7 | 4 | 8 | 10 | 4 | 1 | 3 | 8 | 8 | 3 |
| 1,000–1,999 | 51 | | | | | | | | | | |
| At home | | 95 | 94 | 93 | 95 | 94 | 99 | 96 | 97 | 96 | 99 |
| Away | | 5 | 6 | 7 | 5 | 6 | 1 | 4 | 3 | 4 | 1 |
| 2,000–2,999 | 82 | | | | | | | | | | |
| At home | | 98 | 98 | 96 | 98 | 98 | 100 | 99 | 98 | 97 | 100 |
| Away | | 2 | 2 | 4 | 2 | 2 | [3] | 1 | 2 | 3 | [3] |
| 3,000–3,999 | 52 | | | | | | | | | | |
| At home | | 94 | 96 | 97 | 94 | 97 | 97 | 96 | 95 | 98 | 99 |
| Away | | 6 | 4 | 3 | 6 | 3 | 3 | 4 | 5 | 2 | 1 |
| 4,000 and over | 41 | | | | | | | | | | |
| At home | | 88 | 85 | 85 | 88 | 77 | 67 | 84 | 72 | 78 | 82 |
| Away | | 12 | 15 | 15 | 12 | 23 | 33 | 16 | 28 | 22 | 18 |

| MINNEAPOLIS-ST. PAUL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| All incomes | [2] 245 | | | | | | | | | | |
| At home | | 90 | 88 | 89 | 88 | 89 | 92 | 89 | 89 | 89 | 94 |
| Away | | 10 | 12 | 11 | 12 | 11 | 8 | 11 | 11 | 11 | 6 |
| )–1,999 | 22 | | | | | | | | | | |
| At home | | 97 | 97 | 98 | 96 | 99 | 99 | 99 | 98 | 99 | 100 |
| Away | | 3 | 3 | 2 | 4 | 1 | 1 | 1 | 2 | 1 | [3] |
| 2,000–2,999 | 61 | | | | | | | | | | |
| At home | | 93 | 91 | 89 | 92 | 92 | 96 | 88 | 91 | 91 | 97 |
| Away | | 7 | 9 | 11 | 8 | 8 | 4 | 12 | 9 | 9 | 3 |
| 3,000–3,999 | 68 | | | | | | | | | | |
| At home | | 89 | 89 | 89 | 91 | 90 | 92 | 91 | 91 | 90 | 94 |
| Away | | 11 | 11 | 11 | 9 | 10 | 8 | 9 | 9 | 10 | 6 |
| 4,000–5,999 | 58 | | | | | | | | | | |
| At home | | 85 | 84 | 85 | 84 | 89 | 96 | 87 | 88 | 90 | 96 |
| Away | | 15 | 16 | 15 | 16 | 11 | 4 | 13 | 12 | 10 | 4 |
| 6,000 and over | 26 | | | | | | | | | | |
| At home | | 90 | 88 | 87 | 87 | 82 | 84 | 92 | 80 | 85 | 95 |
| Away | | 10 | 12 | 13 | 13 | 18 | 16 | 8 | 20 | 15 | 5 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.
[2] Includes homemakers in families not classified by income, not shown separately
[3] 0.5 percent or less.

TABLE 23.—FOOD AT HOME AND AWAY FROM HOME BY MEAL OF DAY: *Percent of meals and proportion of nutritive content of food obtained at home and away from home, 2 cities*

[Homemakers in housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| City, meal of day, and source of food | Percent of meals at home and away | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| BIRMINGHAM [2] | | | | | | | | | | |
| All meals: | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| At home | 95 | 94 | 93 | 93 | 92 | 91 | 94 | 91 | 92 | 95 |
| Away | 5 | 6 | 7 | 7 | 8 | 9 | 6 | 9 | 8 | 5 |
| Morning meal: | | | | | | | | | | |
| At home | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Away | (3) | (3) | (3) | (3) | (3) | (3) | (3) | (3) | (3) | (3) |
| Noon meal: | | | | | | | | | | |
| At home | 90 | 86 | 85 | 86 | 80 | 69 | 86 | 76 | 81 | 80 |
| Away | 10 | 14 | 15 | 14 | 20 | 31 | 14 | 24 | 19 | 20 |
| Evening meal: | | | | | | | | | | |
| At home | 95 | 95 | 95 | 96 | 96 | 99 | 97 | 97 | 96 | 99 |
| Away | 5 | 5 | 5 | 4 | 4 | 1 | 3 | 3 | 4 | 1 |
| Between meals: | | | | | | | | | | |
| At home | 91 | 89 | 87 | 91 | 86 | 93 | 90 | 90 | 78 | 99 |
| Away | 9 | 11 | 13 | 9 | 14 | 7 | 10 | 10 | 22 | 1 |
| MINNEAPOLIS-ST. PAUL [2] | | | | | | | | | | |
| All meals: | | | | | | | | | | |
| At home | 90 | 88 | 89 | 88 | 89 | 92 | 89 | 89 | 89 | 94 |
| Away | 10 | 12 | 11 | 12 | 11 | 8 | 11 | 11 | 11 | 6 |
| Morning meal: | | | | | | | | | | |
| At home | 100 | 99 | 99 | 100 | 99 | 100 | 98 | 99 | 99 | 100 |
| Away | (3) | 1 | 1 | (3) | 1 | (3) | 2 | 1 | 1 | (3) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noon meal: | | | | | | | | | | |
| At home | 87 | 82 | 83 | 85 | 85 | 90 | 89 | 87 | 84 | 84 |
| Away | 13 | 18 | 17 | 15 | 15 | 10 | 11 | 13 | 16 | 16 |
| Evening meal: | | | | | | | | | | |
| At home | 90 | 89 | 90 | 91 | 90 | 93 | 90 | 89 | 91 | 94 |
| Away | 10 | 11 | 10 | 9 | 10 | 7 | 10 | 11 | 9 | 6 |
| Between meals: | | | | | | | | | | |
| At home | 74 | 71 | 69 | 70 | 68 | 72 | 56 | 70 | 75 | 89 |
| Away | 26 | 29 | 31 | 30 | 32 | 28 | 44 | 30 | 25 | 11 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.
[2] Percents based on total number of homemakers in each city: 261 in Birmingham and 245 in Minneapolis-St. Paul.
[3] 0.5 percent or less.

TABLE 24.—NUTRITIVE CONTENT OF MEALS AT HOME AND AWAY FROM HOME: *Averages per meal eaten, 2 cities*

[Homemakers in housekeeping families of 2 or more persons in Birmingham, Ala., and Minneapolis-St. Paul, Minn., winter 1948]

| City, meal of day, and source of food | Meals reported by homemaker as— | | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Eaten | Omitted | | | | | | | | | |
| BIRMINGHAM | | | | | | | | | | | |
| Morning, noon, and evening meals (average of the 3 meals) | *Number* 728 | *Number* 55 | *Calories* 620 | *Grams* 20 | *Grams* 0. 21 | *Milligrams* 4. 1 | *International Units* 3, 050 | *Milligrams* 0. 43 | *Milligrams* 0. 51 | *Milligrams* 4. 2 | *Milligrams* 31 |
| At home | 689 | | 614 | 20 | . 21 | 4. 1 | 2, 930 | . 43 | . 50 | 4. 1 | 31 |
| Away | 39 | | 713 | 26 | . 25 | 5. 6 | 5, 110 | . 46 | . 84 | 6. 1 | 33 |
| Morning meal | 254 | 7 | 516 | 13 | . 15 | 3. 2 | 1, 080 | . 31 | . 37 | 2. 4 | 14 |
| At home | 253 | | 518 | 14 | . 15 | 3. 2 | 1, 080 | . 31 | . 37 | 2. 4 | 14 |
| Away | 1 | | [2] | [2] | [2] | [2] | [2] | [2] | [2] | [2] | [2] |
| Noon meal | 223 | 38 | 570 | 19 | . 21 | 3. 6 | 2, 780 | . 39 | . 52 | 4. 0 | 26 |
| At home | 198 | | 553 | 18 | . 21 | 3. 2 | 2, 170 | . 37 | . 44 | 3. 7 | 23 |
| Away | 25 | | 706 | 25 | . 27 | 6. 3 | 7, 610 | . 55 | 1. 10 | 6. 8 | 45 |
| Evening meal | 251 | 10 | 768 | 27 | . 27 | 5. 6 | 5, 280 | . 59 | . 65 | 6. 3 | 55 |
| At home | 238 | | 768 | 27 | . 27 | 5. 7 | 5, 530 | . 60 | . 67 | 6. 4 | 57 |
| Away | 13 | | 765 | 28 | . 21 | 4. 6 | 630 | . 30 | . 40 | 5. 2 | 12 |
| Between meals | 77 | | 282 | 6 | . 08 | . 9 | 250 | . 10 | . 13 | 1. 0 | 14 |
| At home | 70 | | 276 | 6 | . 08 | . 9 | 250 | . 10 | . 13 | . 9 | 16 |
| Away | 7 | | 336 | 8 | . 08 | 1. 4 | 200 | . 10 | . 14 | 2. 5 | 2 |

| MINNEAPOLIS-ST. PAUL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Morning, noon, and evening meals (average of the 3 meals) | 716 | 19 | 547 | 20 | .18 | 3.5 | 2,130 | .37 | .44 | 4.2 | 26 |
| At home | 659 | | 529 | 19 | .18 | 3.4 | 2,140 | .37 | .43 | 4.1 | 27 |
| Away | 57 | | 752 | 27 | .21 | 4.5 | 2,000 | .42 | .53 | 5.5 | 18 |
| Morning meal | 236 | 9 | 331 | 9 | .13 | 1.7 | 700 | .20 | .25 | 1.3 | 31 |
| At home | 235 | | 330 | 9 | .13 | 1.7 | 700 | .19 | .25 | 1.3 | 31 |
| Away | 1 | | [2] | [2] | [2] | [2] | [2] | [2] | [2] | [2] | [2] |
| Noon meal | 238 | 7 | 521 | 20 | .21 | 3.2 | 1,890 | .33 | .47 | 4.0 | 15 |
| At home | 207 | | 493 | 19 | .21 | 3.2 | 1,950 | .33 | .47 | 3.9 | 14 |
| Away | 31 | | 711 | 26 | .24 | 3.7 | 1,490 | .28 | .47 | 5.1 | 18 |
| Evening meal | 242 | 3 | 782 | 31 | .20 | 5.4 | 3,770 | .59 | .58 | 7.2 | 32 |
| At home | 217 | | 779 | 31 | .21 | 5.4 | 3,900 | .59 | .57 | 7.4 | 33 |
| Away | 25 | | 813 | 30 | .18 | 5.4 | 2,691 | .58 | .61 | 6.0 | 19 |
| Between meals | 119 | | 274 | 7 | .12 | .8 | 315 | .11 | .18 | .8 | 7 |
| At home | 88 | | 264 | 6 | .11 | .8 | 306 | .08 | .17 | .8 | 9 |
| Away | 31 | | 302 | 8 | .13 | 1.0 | 340 | .19 | .21 | .8 | 3 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.
[2] Averages not shown because of too few cases.

# APPENDIX B. METHODOLOGY

## Sample

In the early part of 1948, about 250 housekeeping families in each of 4 cities (Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., San Francisco, Calif.) participated in food-consumption surveys conducted by the Bureau of Human Nutrition and Home Economics. After the family data for 1 week were recorded, the homemaker was asked to recall the kinds and quantities of food she had eaten, meal by meal, during the 24-hour period preceding the interview. These reports are analyzed in this publication.

The families visited in these surveys were selected from a sample of blocks chosen in each city by stratified, random, area sampling. Categories for stratification were: (a) Location in the city, (b) average rental value per block of occupied dwelling units, and (c) number of dwelling units per block. Dwelling units in the sample blocks were chosen by systematic sampling; every *nth* dwelling unit on a block was visited starting with a random number from 1 to *n*.

All households in the dwelling units selected were asked to fill a record card that provided sufficient information to determine whether they were of the type to be included in the survey. To be included, a household had to consist of a minimum of 2 persons, each of whom ate at least 10 meals at home during the week preceding the interview. All eligible families were requested to provide information on household food consumption during the previous week and certain data for the previous year. (See Information Requested, p. 55.) No substitutions were made for families eligible but unwilling or unable to cooperate, families not reached after three visits, or vacant dwelling units. The participation rate (completed schedules as percent of total households known to be eligible) for the four cities was as follows:

| | *Percent* |
|---|---|
| Birmingham | 89 |
| Buffalo | 70 |
| Minneapolis-St. Paul | 81 |
| San Francisco | 77 |

A comparison of selected characteristics of the families that provided food data with those that were eligible but did not participate showed only a few differences. In Birmingham, the economic level, as indicated by the rental values of dwelling units, was lower for the participating families than for the eligible nonparticipating families; in San Francisco, the reverse was true. In Buffalo and Minneapolis-St. Paul, the participating families were slightly larger than the eligible nonparticipating families. On the whole, however, the participating families were fairly representative of the families eligible for inclusion in the study. Furthermore, comparison of other characteristics of participating families with available census data for the entire population of each city points to no important discrepancies. Further information on the families visited and the representativeness of the samples in the four cities may be found in other reports of the 1948 food consumption surveys (*16, 17, 18, 19*).

Reports on the day's meals of homemakers accepted for inclusion in this analysis were restricted to those from women who were related to the family head and who were responsible for the planning of meals and buying of food for the households of which they were members. From the 1,066 families participating in the study, 1,037 acceptable homemakers' reports were obtained. In 28 of the households, no homemaker meeting the eligibility requirements for this study was available at the time of the interview. One eligible homemaker did not participate in the study of homemakers' food for 1 day.

## Collection of Schedules

The field work in each city was done by local residents under the supervision of a Bureau staff member. Training of interviewers, which lasted about a week, included instruction in the selection of households in accordance with the sample design and intensive training and field practice in the techniques of interviewing and filling the schedule and other collection forms. Written instructions giving detailed explanations of almost every entry on the reporting

forms were furnished the interviewers for use during training and for reference during collection of data. Offices were maintained in each city by supervisors for conferences with interviewers, editing of completed schedules, and preliminary computations.

## Information Requested

From families that met the eligibility requirements and that were willing to cooperate, information was obtained for the household on the quantities of food used at home or carried from home during the week preceding the interview, the cost of purchased food used, estimates of quantities of food fed to pets or discarded, the number of persons sharing the family food, the age, height, and weight of each person, and for adults the amount and kind of physical activity engaged in during the week of the food list. These families also reported family income during the preceding year, expenditures for food, the value of any food produced by family members or received as gift or pay, and the quantities of food preserved in the home during the preceding year.

From homemakers, in addition, information was obtained on their food consumption during the 24-hour period preceding the interview in terms of the kind and type of each simple food and the important ingredients in each food mixture eaten at home (though not always the proportions of each), whether the food was served raw, or was boiled, baked, creamed, or prepared by any other method; whether fresh, frozen, canned, dried, or otherwise preserved; and whether eaten at home or away from home. Quantities were reported, meal by meal, in common household measures selected by the homemaker. (For sample report of homemaker's menu, see Appendix C, p. 65.)

## Classification of Physical Activity of Homemaker

A classification of homemakers by degree of activity was made by the interviewer on the basis of the rate and kind of movements demanded by the occupation in which the homemaker was engaged for the greatest number of waking hours during the 7-day period of the food list. The classification used by the National Research Council (*5*) was modified slightly for use in this study. Besides the three classes defining energy requirements and the two additional classes for women, pregnancy and lactation, an additional class for "resting" was added. In an effort to make the terms used by the National Research Council to designate activity more meaningful to both interviewers and the homemakers, two of the terms were changed. During the interview "light activity" was used instead of "sedentary" and "severe activity" was used instead of "very active." In spite of the steps taken to make the classification as objective as possible, it was, nevertheless, exceedingly rough. Considerable opportunity existed for subjective factors to enter. Some of the differences among the four cities in the proportions of women classified as sedentary and moderately active may be laid to different interpretations of the instructions by the city supervisors.

## Periods Covered by the Interviews

Reports of the homemakers' menus were collected in the early part of 1948. Collection of data in Birmingham extended over the period from January 23 to March 19; in Buffalo, from February 13 to April 16; in Minneapolis-St. Paul and San Francisco, from January 23 to April 2.

These reports covered a 24-hour period immediately preceding the interview. The most recent meal was reported first. Usually one or more of the meals included in the period had been eaten on the day before the interview, depending upon the time of day at which the interview took place.

Because interviewers usually worked in the office on Monday morning and because interviewing was not usually done on Sunday, fewer meals on Saturdays and Sundays than on other days of the week are represented in the reports. Too few Saturday and Sunday meals were reported to permit a test of whether weekend meals differed in nutritive content from weekday meals. Among weekdays, no distinct pattern in average nutrient content of homemakers' food was ob-

served (table 25). Additional data would be needed to investigate the representativeness of weekday reporting for the entire 7 days of the week. If weekend food is either considerably higher or lower than weekday food, some of the conclusions drawn in this publication, such as those regarding adequacy of diets, should be qualified.

# Tabulation of the Data

## Calculation of Food Quantities

**Summation of food quantities.**—Quantities of food in the household units reported by the homemakers were converted to pounds and fractions of a pound for machine tabulation in order to make efficient use of devices for tabulating data from food-consumption surveys already in use.

Factors used in this operation were mainly from tables previously prepared by the Bureau of Human Nutrition and Home Economics for use in food-consumption surveys. These were supplemented where necessary by data from Bowes and Church (*1*), Rose (*11*), Taylor (*13*), and other sources. For some reported foods no authoritative conversion factors could be found; for these an estimate was made on the basis of similar foods. Examples of the factors used in this study are as follows: 1 slice of white bread, 0.05 pound; 1 cup of milk, 0.54 pound; 1 medium-size orange, 0.42 pound; 1 egg, 0.12 pound.

Early in the study it was planned that foods eaten *at home* would be tabulated in terms of foods as purchased; that is, quantities of mixed dishes eaten by homemakers would be converted before tabulation to equivalent weights of ingredients in uncooked state, with the use of the recipe provided by the homemaker or of a standard recipe. Only complicated mixtures and those for which recipes were not available were to be tabulated as mixtures and included in the food group of the major ingredient. As the study progressed and the amount of work involved in breaking down even the simpler home-cooked mixtures into ingredients as purchased became apparent, it was decided that for the schedules remaining to be tabulated, all mixtures (even such simple dishes as mashed potatoes) would be tabulated in quantities as served, providing good composition values were available to compute the nutritive value of the mixture.

This change in procedure probably had little effect on the computation of nutritive values of the diets, but it resulted in some overestimation of *quantities* of some food groups and underestimation of others. Overestimation of a food group would result in those instances where the entire weight of the mixture was included in the food group of its major component. In the case of mashed potatoes, for example, the entire weight was included as potatoes, with no weight assigned to the milk or fat group.

This procedure resulted also in smaller total quantities of foods for some homemakers than for others for still another reason. Those homemade mixtures that were not broken down into their component parts were tabulated on an edible-portion basis. On the other hand, for foods reported as purchased and for mixtures converted to this latter basis, the converted weight included usual inedible refuse. For foods with a high percentage of refuse, as peas in shell, or unshelled nuts, the difference in weight on the two bases is important.

This shift in procedure did not affect equally the quantity data reported for each of the four cities. Computations in Birmingham were well along at the time and were completed as begun. For about one-fourth, one-half, and three-fourths, respectively, of the homemakers in San Francisco, Minneapolis-St. Paul, and Buffalo, at least one home-cooked mixed dish was not converted to ingredients as purchased, but tabulated as served.

Foods eaten *away from home* were tabulated in the form reported by the homemaker. That is, the quantities are strictly on an edible-portion basis except for foods with plate waste, as half a grapefruit, pork chops, and the like, and consequently are not directly comparable with quantities consumed at home. The total weight of food mixtures eaten away from home was also tabulated in the food group represented by the major component, with consequent overestimation for some food groups and underestimation for others, just as for home-cooked mixtures that were not broken down into ingredients.

The problems involved in the summation of food quantities into food groups are not confined to this type of study in which food eaten is recorded in menu form. In family surveys of food purchased or used during a week, the problem

TABLE 25.—*Average nutritive content of 1 day's food for day of week on which homemaker reported, 4 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| City and day of week in which 2 or more meals were eaten | Homemakers reporting on specified day | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Number* | *Calories* | *Grams* | *Grams* | *Milligrams* | *International Units* | *Milligrams* | *Milligrams* | *Milligrams* | *Milligrams* |
| BIRMINGHAM [2] | | | | | | | | | | |
| Monday | 49 | 1, 880 | 58 | 0. 56 | 12. 2 | 8, 240 | 1. 16 | 1. 32 | 12. 6 | 81 |
| Tuesday | 68 | 1, 770 | 55 | . 61 | 12. 0 | 8, 200 | 1. 20 | 1. 57 | 11. 4 | 85 |
| Wednesday | 60 | 1, 870 | 56 | . 64 | 11. 2 | 8, 790 | 1. 18 | 1. 41 | 11. 5 | 112 |
| Thursday | 40 | 1, 860 | 62 | . 63 | 12. 0 | 9, 220 | 1. 43 | 1. 40 | 12. 1 | 97 |
| Friday | 31 | 1, 710 | 58 | . 64 | 13. 0 | 10, 680 | 1. 09 | 1. 85 | 14. 4 | 87 |
| BUFFALO [2] | | | | | | | | | | |
| Monday | 45 | 1, 810 | 73 | . 48 | 12. 4 | 7, 370 | 1. 44 | 1. 47 | 16. 6 | 82 |
| Tuesday | 59 | 1, 710 | 67 | . 52 | 11. 3 | 5, 260 | 1. 21 | 1. 31 | 14. 4 | 77 |
| Wednesday | 51 | 1, 780 | 67 | . 61 | 12. 1 | 5, 970 | 1. 25 | 1. 51 | 14. 2 | 85 |
| Thursday | 57 | 1, 600 | 60 | . 50 | 10. 6 | 5, 590 | 1. 01 | 1. 25 | 12. 1 | 78 |
| Friday | 22 | 1, 680 | 61 | . 50 | 12. 5 | 10, 690 | 1. 15 | 1. 74 | 15. 4 | 81 |
| MINNEAPOLIS-ST. PAUL [2] | | | | | | | | | | |
| Monday | 44 | 1, 680 | 59 | . 52 | 9. 7 | 4, 920 | 1. 16 | 1. 24 | 12. 2 | 70 |
| Tuesday | 53 | 1, 700 | 57 | . 57 | 9. 7 | 6, 180 | 1. 07 | 1. 21 | 11. 8 | 71 |
| Wednesday | 52 | 1, 840 | 65 | . 60 | 11. 3 | 6, 410 | 1. 26 | 1. 48 | 13. 6 | 99 |
| Thursday | 52 | 1, 730 | 63 | . 58 | 11. 3 | 7, 800 | 1. 12 | 1. 52 | 14. 0 | 84 |
| Friday | 38 | 1, 610 | 59 | . 64 | 10. 3 | 6, 410 | 1. 16 | 1. 32 | 12. 4 | 78 |
| SAN FRANCISCO [2] | | | | | | | | | | |
| Monday | 53 | 1, 790 | 69 | . 56 | 11. 4 | 7, 640 | 1. 28 | 1. 25 | 13. 8 | 95 |
| Tuesday | 50 | 1, 860 | 74 | . 62 | 13. 0 | 8, 680 | 1. 26 | 1. 55 | 16. 3 | 99 |
| Wednesday | 53 | 1, 760 | 66 | . 58 | 12. 9 | 8, 940 | 1. 29 | 1. 53 | 14. 3 | 112 |
| Thursday | 56 | 1, 890 | 68 | . 61 | 13. 3 | 11, 180 | 1. 10 | 1. 54 | 15. 2 | 129 |
| Friday | 48 | 1, 880 | 70 | . 67 | 11. 9 | 7, 770 | 1. 21 | 1. 56 | 15. 3 | 84 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

[2] Saturdays and Sundays excluded because of small number of cases. Reports for Saturday or Sunday were received as follows: Birmingham, 13; Buffalo, 20; Minneapolis-St. Paul, 6; San Francisco, 17.

of food mixtures and food in different stages of processing exists though to a lesser extent than in 1-day menus. For example, many families use ready-prepared chile con carne, corned beef hash, and other such mixtures of more than one of the dozen or so food groups into which foods are commonly classified. Other frequently purchased foods that are mixtures of two or more groups are: Ice cream, canned fruits, potato chips, bread and other baked goods. Still other foods are in different states of processing; milk, for example, may be fluid, evaporated, or dry. Other foods may be in different states of trimming, such as meat with bone in or without bone. The weight of those vegetables and fruits that are purchased canned or frozen include little or none of the inedible refuse found in the fresh products, yet sometimes both are added together.

For milk and grain products, some attempt is usually made to make the quantities additive (see Classification of foods, below, and Glossary, Flour equivalent, p. 66, and Milk equivalent, p. 67). The amounts of the sugar, fat, eggs and other foods that might be included in the products of these two groups, however, are not transferred to other groups. Furthermore, no attempt usually is made to separate the items from the various food groups that are included in such mixtures as canned corned beef hash.

The problems involved in the summation of foods are therefore not peculiar to the present study of homemakers' meals. To some extent these problems exist in all types of food-consumption surveys. In any study of meals, the summation of food quantities is further complicated because mixtures form a fairly large share of the foods as recorded in menus. In this study, especial care must be taken in comparing food quantities from one city to another because mixtures were broken down to a different degree in each of the four cities. The tables that are presented in this report, however, are believed not to be misleading when the user understands the methodology of this and other dietary surveys. Those items, such as fats and sugar, for which the data might have been misleading when used in city comparisons have been omitted from the tables.

**Classification of foods.**—The classification of foods into 11 groups used in this study was similar to that used by the Bureau of Human Nutrition and Home Economics in other recent food-consumption studies and in its food plans. This classification is based chiefly upon the similarity of foods as sources of important nutrients. As previously stated, mixtures of food that were not broken down into quantities as purchased were included wholly in the food group of the major component. The main foods included in each of the 11 food groups used in this study are listed below.

*Milk, cream, ice cream, cheese.*—Included in total milk equivalent is fluid milk and the fluid-whole-milk equivalent of processed milk, cream, ice cream, and cheese. See Glossary, Milk equivalent, p. 67, for factors used. May exclude milk used in homemade baked goods, cream soups, and the like. (See Summation of food quantities, pp. 56 and 58.) Excludes all milk used in the commercial preparation of bread, other baked goods, and other readymade products.

*Fats, oils.*—Butter, margarine, oils, salad dressings, mayonnaise, lard, other shortening, bacon and salt pork, fat drippings. Because some of the fats used in frying, as dressing or seasoning for vegetables, and in the preparation of many homemade dishes (such as meat mixtures and cake and pastry) were not included in the quantities tabulated for this group, a column for the total of this group has been omitted from tables 10, 17, and 18.

*Eggs.*—May not include eggs used in homemade baked goods and desserts.

*Meat, poultry, fish.*—All kinds, except bacon and salt pork. May include such mixtures as corned beef hash, stew, meat loaf.

*Dry beans and peas, nuts.*—Mature dry beans and peas of all kinds, soybeans, lentils, nuts, nut butters, cocoa, chocolate. Includes equivalent dry weight of canned and ready-cooked mature beans and peas, lentils, in soups and other mixtures, and the shelled equivalent of nuts in shell.

*Potatoes, sweetpotatoes.*—Fresh, canned, ready-cooked. Includes chips, sticks, and potato salad.

*Citrus fruits, tomatoes.*—Fresh and canned; includes single-strength equivalent of concentrated juice.

*Leafy, green, and yellow vegetables.*—Fresh, canned, frozen. Does not include sweetpotatoes, rutabagas, summer squash, corn, cucumbers.

*Other vegetables and fruits.*—Fresh, canned, frozen; fresh equivalent of dehydrated or dried vegetables and fruits. Includes soups and ready-cooked mixtures, chiefly vegetables. Includes pickles and olives.

*Sugars, sweets.*—Sugars, sirups, honey, molasses, candies, jam, jellies, preserves, marmalades, dry packaged puddings, powdered drinks, prepared icing or candy mixes, and the sugar equivalent of ready-prepared puddings, soft drinks, sherbet, and the like. Because some of the sugar used in homemade baked goods and in other cooked foods was not included in the quantities tabulated for this group, a column for the total of this group has been omitted from tables 10, 17, and 18.

*Grain products.*—Flour, meals, uncooked cereals, and pastes, ready-to-eat cereals, and dry prepared flour mixes; dry equivalent of ready-cooked or canned cereals, pastes, and soups chiefly grain products; flour equivalent of commercially baked goods. Includes sandwiches. See Glossary, Flour equivalent, p. 66, for factors used.

## Calculation of Nutritive Content of Foods

**Food-composition values.**—Quantities of foods in pounds (edible-portion or as-purchased basis) were multiplied by appropriate composition values of each food in terms of calories, protein, calcium, iron, and five vitamins. The major source of data for these calculations was the United States Department of Agriculture's Tables of Food Composition in Terms of Eleven Nutrients (*20*). For foods not included in this publication, composition values were based on other compilations, on original data in the literature, on results of analyses made in the laboratories of the Bureau, or on calculations of the value of mixtures based upon standard recipes. A few unpublished revisions of the composition values in Tables of Food Composition were used but the calculations did not incorporate all of the revisions now published in Agriculture Handbook No. 8, Composition of Foods, Raw, Processed, Prepared (*22*). Recalculation of the nutritive content of the homemakers' food would show approximately the same results for food energy and all the nutrients except thiamine. For this vitamin, the revised calculations would be slightly lower than those now incorporated in this report.[1]

When the weights of foods in the "as purchased" form are multiplied by the corresponding composition values, allowance is automatically made for average amounts of refuse such as bone, rinds, and peelings that usually are discarded in preparing foods. Some allowance is also made for slight defects in fruits and vegetables, but no allowance is made for excessive loss incurred in foods of inferior quality or in wasteful preparation practices.

When the weights of foods in the "edible portion" form are multiplied by the composition values of "edible portion" food, resulting nutritive values are based upon the amounts of foods after inedible refuse and waste have been deducted by individual homemakers.

The differences that might result from these two types of calculation are important for fresh fruits and vegetables and are significant only if the portion discarded by a homemaker was much more or much less than the average figures from the composition tables.

Most difficult to handle in computations of nutritive value for 1-day records is meat. In the first place, the weight of the household measure specified (for example, slices of various dimensions) is especially difficult to estimate. In this study the usual practice was to convert this weight back to the weight of the cut as purchased (as indicated by the household food list), unless the meat was part of a mixture. Average figures were used in this conversion, but because of wide variations in types of cuts and fat content, considerable error could exist not only in the weight of the meat in any individual diet, but also in its calculated nutritive content.

[1] Calculation of the nutritive value of the national food supply for 1948 indicated that when values in Agriculture Handbook No. 8, Composition of Foods, Raw, Processed, Prepared (*22*) were used, the total quantity of thiamine available was approximately 10 percent lower than when earlier values from Tables of Food Composition in Terms of Eleven Nutrients (*20*) were used. The decrease in the quantity of thiamine available was chiefly due to lower thiamine values for the meat, poultry, fish group, where the decrease was about 20 percent as compared with earlier values.

**Nutrient losses in cooking.**—Most foods undergo cooking or some other form of preparation before being served and some account must therefore be taken, when evaluating the nutritive adequacy of food eaten, of losses of nutrients that may occur during cooking or other kitchen practices, or that occurred during storage of leftovers. Such losses are known to be important for several vitamins, particularly ascorbic acid and thiamine. Since no information was obtained on cooking practices of the families in this study, and no complete table of cooking loss figures was available at the time these calculations were made, no attempt has been made to deduct all losses from the nutritive content of *each* homemaker's diet. Some account of cooking losses was taken for those foods that were calculated on an "edible portion" basis.

For some of the tables in this report *average* quantities of thiamine, riboflavin, niacin, and ascorbic acid were adjusted for estimated losses of nutrients in the preparation and cooking of all foods. Factors used in estimating such losses (table 26) were rough estimates for broad groups of food as purchased. As used here they may slightly overestimate losses since, as already stated, some mixtures were handled on a cooked edible-portion basis with cooking losses already taken into account. On the other hand, the factors in table 26 are based on better-than-average cooking practices of families. Their use may therefore underestimate cooking losses. Deduction of cooking losses from the nutritive content of the homemakers' diets was made by multiplying the quantities of the nutrient contributed by each of the food groups by the proportion of the nutrient estimated to have been retained in cooking (the complement of figure in table 26). Basic data were tabulated so that such calculations could be made for tables 9, 11, and 16.

## Calculation of Averages

Averages were calculated on three bases in this study. By far the largest number are averages per homemaker based upon the number of homemakers in each classification. In one table, number 24, the averages are based upon the number of homemakers reported as having eaten the specified meals, since a few homemakers reported omitting meals. The third type of average is the quantity of specified nutrients per nutrition unit per day for which the nutrition unit was taken to be a physically active man (used only in table 27).

TABLE 26.—*Factors used in computing the loss of thiamine, riboflavin, niacin, and ascorbic acid during preparation and cooking of food, for 11 food groups* [1]

| Food group [2] | Thiamine | Riboflavin | Niacin | Ascorbic acid |
|---|---|---|---|---|
| | *Percent* | *Percent* | *Percent* | *Percent* |
| Milk, cream, ice cream, cheese | | | | |
| Fats, oils: | | | | |
| Bacon, salt pork | 55 | | | |
| Eggs | 15 | 5 | | |
| Meat, poultry, fish | 25 | 5 | 10 | |
| Dry beans and peas, nuts | | | | |
| Potatoes, sweetpotatoes | 25 | 20 | 20 | 35 |
| Citrus fruits, tomatoes | | | | 5 |
| Leafy, green, and yellow vegetables | 45 | 40 | 40 | 50 |
| Other vegetables and fruits | 20 | 20 | 20 | 25 |
| Sugars, other sweets | | | | |
| Grain products: | | | | |
| Flour and uncooked cereals | 10 | | 10 | |

[1] Estimates of losses are based on cooking practices that are probably better than average for families in the United States.

[2] For each group except grain products, the average loss is a weighted average of the loss for items usually cooked and of that for those items that are not cooked before serving.

Source: An unpublished compilation of data on cooking losses maintained by the Human Nutrition Research Branch, Agricultural Research Service.

**Averages per nutrition unit.**—It was first thought that, as it is necessary in family surveys to make allowances for differences in family size and composition, it would also be necessary in this study of homemakers' food to reduce the varying needs of the homemakers having different degrees of physical activity and those who were very tall or very short to a common unit. Averages per nutrition unit (adult-male equivalent) were therefore calculated. Because differences in the homemakers' activity made relatively little difference in the nutritive content of their diets, however, the averages per nutrition unit have not been presented in this report. Only for the comparison with the household averages (see section below) have the averages per nutrition unit been retained.

The scale used to compute the number of equivalent nutrition units was based on the Recommended Dietary Allowances of the National Research Council (*5*), in lieu of a table of actual consumption of the nutrients by persons of different sex, age, and activity. For calories and each of 8 essential nutrients the daily allowance for a physically active adult male was considered as 1 nutrition unit. The allowances recommended for women of the several activity groups were then related to the needs of the physically active adult male.[2] The resulting fractions, such as 0.67 for calories for the sedentary women (between 5 feet and 5 feet 8 inches tall), constituted the divisors in computing averages per nutrition unit for the homemakers' diets. Similarly, in computing averages per nutrition unit for family diets on which table 27 is based, the nutrient needs of persons in other sex-age-activity groups were taken into account.

## Comparison of Food of Homemakers and Averages for Household

With food data available from the homemaker for a 24-hour period that fell within the 7-day period for which food-consumption data for the household were also available, some comparisons of the homemaker's food and the household average are possible. These comparisons must be limited, however, to the nutritive content of the food, since the two sets of food quantities are not directly comparable. As is customary in family food consumption surveys, the household food quantities were tabulated on an "as purchased" basis; the homemakers' food, however, was tabulated partly on an "as purchased" basis and partly on an "edible portion" basis (see pp. 56 and 58). This difference in tabulation does not invalidate a rough comparison of the nutritive content of the food consumed, although several methodological differences discussed below limit the usefulness of the data as an indication of the homemaker's share of household food.

### Comparison of Nutritive Content

In each of the four cities the average nutritive content of homemakers' food was considerably lower than that of their households even when both sets of averages were computed on an adult-male-equivalent basis. For the several nutrients, averages per homemaker ranged from one-half to slightly over two-thirds of the household averages (table 27).

The rather wide difference between the average amounts of nutrients in the homemakers' food and those of their households may be accounted for only in part, however, by real differences in the division of food among the members of the household group. Possible methodological differences in the reporting and handling of the data must also be considered. These are discussed in some detail below because they are important in evaluating the differences between household data and menu data for an individual and are pertinent points to be considered in planning future research of this nature.

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[2] Differences in calorie needs of very short or tall women were taken into account by modifying the table of energy requirements. According to the NRC, sedentary women, for example, need 2,000 calories. In calculations for this study a sedentary woman under 5 feet was assumed to need but 1,700 calories while one 5 feet 8 inches and over was assumed to need 2,400 calories.

TABLE 27.—*Nutritive content per nutrition unit (adult-male equivalent) of homemakers' food for 1 day as a percent of corresponding household averages, 4 cities*

[Housekeeping families of 2 or more persons in Birmingham, Ala., Buffalo, N. Y., Minneapolis-St. Paul, Minn., and San Francisco, Calif., winter 1948]

| City | Homemakers | Food energy | Protein | Calcium | Iron | Vitamin A value | Thiamine [1] | Riboflavin [1] | Niacin [1] | Ascorbic acid [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Number* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* | *Percent* |
| Birmingham | 261 | 56 | 60 | 54 | 53 | 72 | 55 | 62 | 58 | 63 |
| Buffalo | 254 | 56 | 68 | 48 | 64 | 60 | 60 | 60 | 68 | 52 |
| Minneapolis-St. Paul | 245 | 61 | 69 | 52 | 63 | 64 | 62 | 60 | 68 | 58 |
| San Francisco | 277 | 63 | 67 | 50 | 62 | 64 | 66 | 59 | 70 | 57 |

[1] Not adjusted for nutrient losses in preparation and cooking of food.

## Methodological Differences in Reporting and Handling of the Data

**Time period.**—The two sets of data (on which nutritive content is based), that is, quantitative menus for a single day for the homemakers and estimates of total food for a week for the households, represent differences in periods of time covered. Both reports were by recall, but the homemaker would have less difficulty in recalling fully her own menu for the 24-hour period immediately preceding the interview than in recalling fully the household food for a 7-day period. Food consumption for a single day may not be as representative of an individual's diet as would be true for a longer period but for a *group* of homemakers, the average consumption based on 1-day records should be comparable to average consumption based on the 7-day reports. Because Saturday and Sunday were not adequately represented in the homemakers' menus, some of the difference between the two sets of averages could be ascribed to this factor if the nutritive value of weekend food were much higher than weekday food. Unfortunately, the present study did not provide sufficient records of weekend consumption to draw any conclusions on this latter point (see pp. 56 and 57).

**Point of measurement.**—Perhaps the most important difference in reporting the homemaker's and family's food was in the point or stage at which measurement was made. The homemaker was asked to report on the food she ate by recalling her day's menus and between-meal snacks. For the family food list, information was first requested on all the food used during the week (that is, brought into the kitchen and used during the week or used from previous supplies on hand), and in a later section information on food not actually eaten (that is, wasted or fed to pets) by household members was requested. Presumably the difference between the two estimates represented the food consumption of household members during the week.

For the most part, the homemakers' reports represented actual consumption; that is, they were estimates of food used at the table, not in the kitchen. The food reported was in terms of servings eaten. For example, if a homemaker had eaten only half of her serving of mashed potatoes, she would have reported only one-half of a serving. No probing was done, however, to be sure that such items as the separable fat from meat, crusts of bread, and sugar in coffee cups were excluded from her estimate of food consumed.

The estimates of household food consumption for the week probably overestimate to a considerable extent the actual intake of some foods. It is thought that respondents did not report fully on quantities of food not eaten. In the four cities combined, almost one-half (48 percent) of the schedules contained no report on food wasted or fed to pets during the survey week even though special effort was made to obtain such estimates from the persons interviewed. Students of dietary surveys recognize the many difficulties inherent in obtaining accurate waste data, especially for fat. A thorough study of food waste requires much time and effort on the part of respondents and it is doubtful if such a study could be made of a representative population group such as that studied in each of the four cities. Furthermore, the mere keeping of records on waste may bias the results considerably. In the present study—as in most family dietary studies—high calorie averages relative to physiological needs further substantiate the presumption that some food that was wasted has not been deducted from the estimates of food consumed by household members. (The average number of calories per adult-male equivalent ranged from 3,700 to 4,400 in the 4 cities compared with the recommended allowance of 3,000 calories (*14*).) It therefore seems probable that the reports on household food were more nearly a measure of food "available for consumption," while the homemakers' reports were close to actual intake. This is probably the major methodological difference between the family and homemaker averages.

**Reporting errors.**—Reporting errors that would be more peculiar to the homemaker than to other family members may account in part for the low nutritive content of the homemaker's diet in relation to that of the households. Many homemakers taste foods they are preparing or eat small portions of food while transferring quantities from one container to another. Also, homemakers sometimes eat small portions of food left in serving dishes rather than store them or throw them away. Small quantities such as these may not have been completely

reported in this study although such underreporting was avoided as much as possible by careful interviewing.

Undoubtedly some reporting error does exist in these data. There is no reason to believe, however, that such error is more severe in any one of the several classifications of homemakers than in others; hence, the analysis of the various factors affecting the nutritive content of homemakers' meals, such as age and education, is probably not significantly influenced.

**Units of measure.**—The quantities of food reported in the meals of the homemaker were dependent not only on her ability to recall but on her judgment in estimating quantities in terms of tablespoons, cups, and other household units of measure. Some homemakers are poor judges of exact quantities when not actually measured, and it is possible that some of the homemakers estimated quantities in terms of larger or smaller utensils than standard size. In reporting food for the household, quantities could often be reported in the unit of purchase, such as quarts of milk, or No. 2 cans of vegetables. Such units could be checked with similar or identical containers in the household at the time of the interview. While it is believed that the units reported for the household were more accurate than for the homemakers, it is not necessarily true that this would have resulted in relatively lower nutritive content of homemakers' diets since overestimation would have been as likely as underestimation of quantities.

In this respect also there is no reason to believe that such error is greater in any one of the several classifications of homemakers than in others.

**Food-composition values and cooking losses.**—See Food-composition values, p. 59, and Nutrient losses in cooking, p. 60, for methodological differences involved when the nutritive value of some foods is computed on an "as purchased" basis (as in the family surveys and for some of the foods in this study) and when the nutritive value of other foods is calculated on an "edible portion" basis (as for mixtures in this study).

The differences between the family and homemaker averages ascribable to this factor are smallest for the Birmingham homemakers, for whom all the food served in the home was tabulated on an "as purchased" basis. The percentages in table 27 for the homemakers in the other three cities, with varying amounts of home-served foods calculated on an "as purchased" basis, would be underestimated more than those for Birmingham, but probably not much in any case.

**Applicability of scales for measuring equivalent nutrition units.**—The nutritional needs of individuals are dependent largely upon their sex, age, height, and activity. Theoretical differences in needs between homemakers and households of varying composition have presumably been partially eliminated by the device of calculating averages per nutrition unit. To the extent that homemakers or other family members did not eat according to their *relative* nutritional needs, however, differences between the averages for homemakers and households (table 27) may not have been allowed for by use of the averages per nutrition unit. For example approximately 45 percent of the homemakers who were classed as sedentary had less than 1,500 calories in their diets. Therefore, they were obtaining less than 50 percent as many calories as the physically active man is thought to need (that is, 3,000 calories). Yet according to the scale of recommended allowances upon which the equivalent nutrition units are based, the figure for a sedentary woman is 2,000 calories and she is therefore counted as the equivalent of 0.67 of a physically active man. If such overestimation of need exists for the homemaker to a greater extent than for children and other family members, the use of the scale based on the suggested NRC allowances, rather than a scale (not available) based on actual consumption, tends to underestimate the averages per nutrition unit for the homemakers' diets more than for family diets. The result, therefore, may somewhat exaggerate the "true" difference between the two sets of averages.

# APPENDIX C. SAMPLE MENU FORM

## MENU DURING LAST 24 HOURS OF WOMAN REPORTING FAMILY FOOD CONSUMPTION

Date *Feb. 24*, 1948

[Italics indicate entries by interviewers]

| Menu<br>All simple foods and food mixtures eaten at home and away from home by homemaker | Specify whether eaten from family food supplies or away from home | Raw, uncooked, boiled, creamed, fried, broiled, roasted, baked, scalloped | Fresh, frozen, canned, dried, cured, ready-cooked | Important foods in each food mixture eaten by homemaker | Quantity in household measure of each food eaten by homemaker |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |
| **LAST MEAL SERVED M N E** | | | | | |
| *Orange juice* | *Family* | *Raw* | *Fresh* | | *1 orange, med.* |
| *Oatmeal* | *do* | *Boiled* | *Dried* | | *½ cup, ckd.* |
| *Sugar* | *do* | *Raw* | | | *2 tsps., level.* |
| *Milk* | *do* | *do* | *Fresh* | | *⅛ cup.* |
| *Bread, white, enriched* | *do* | *Toasted* | *Ready-cooked.* | | *1 slice.* |
| *Butter* | *do* | *Raw* | | | *1½ tsps., level.* |
| *Coffee* | *do* | *Boiled* | | | *1½ cups.* |
| *Cream* | *do* | *Raw* | *Fresh* | | *2 tsps., level.* |
| **NEXT TO LAST MEAL M N E** | | | | | |
| *Hash*[1] | *do* | *Baked* | *do* | *Cold roast beef, boiled potatoes, onion.* | *¾ cup (3/20 of recipe).* |
| *Tomatoes* | *do* | *Boiled* | *Canned* | | *½ cup.* |
| *Coleslaw* | *do* | *Raw* | *Fresh* | *Cabbage, vinegar, sugar, salt.* | *⅓ cup.* |
| *Peach sauce* | *do* | *do* | *Canned* | | *2 halves.* |
| *Coffee* | *do* | *Boiled* | | | *1 cup.* |
| *Bread, white, enriched* | *do* | *Raw* | *Ready-cooked.* | | *1 slice.* |
| *Cake (cherry)* | *do* | *do* | *do* | | *2 inches in diameter (2 oz).* |
| **FIRST MEAL M N E** | | | | | |
| *Bacon* | *do* | *Fried* | *Cured* | | *⅛ pound, raw.* |
| *Bread, white, enriched* | *do* | *Toasted* | *Ready-cooked.* | | *2 slices.* |
| *Coffee* | *do* | *Boiled* | | | *1 cup.* |
| *Peach sauce* | *do* | *Raw* | *Canned* | | *½ cup.* |
| *Cream* | *do* | *do* | *Fresh* | | *2 tsps., level.* |
| **PACKED LUNCHES AND BETWEEN MEAL SNACKS LAST 24 HOURS** | | | | | |
| *None* | | | | | |

[1] *Recipe for hash: Beef, 2 cups; butter, 4 tablespoons; potatoes, 3 cups; onion, 1 small.*

# GLOSSARY

**Age of homemaker.**—Age at last birthday. The interviewers were instructed that if it was not possible to get age for an adult, to give an approximate figure.

**Day of week.**—When used for classification purposes, refers to the day on which at least 2 of the 3 meals reported on during a 24-hour period were eaten.

**Education of homemaker.**—Highest grade or years of school completed. Three classifications, elementary school, high school, and college, have been used to designate the educational level of the homemaker. Those reporting no formal education were included in the elementary-school group.

**Employment of homemaker.**—Any part- or full-time work away from home at the time of the interview.

**Family income.**—Income classification refers to the 1947 money income after deduction of Federal income tax of the family of which the homemaker was a member. In reporting income, families were asked to give information on wages and salary of each family member; net returns from business and family enterprises, such as taking boarders; and other income such as dividends, interest, retirement benefits, and cash relief payments. Lump-sum payments of inheritances, terminal leave allowances, and the like, were not included.

A few families could not be classified by income, because they were unable or unwilling to report their income to an interviewer, or were not asked to give information on income. Those not asked included: (*a*) Those that did not exist as a family in 1947 but were members of other families or lived as single individuals in 1947, and (*b*) groups that shared a common food and housekeeping fund but did not pool income and did not depend upon family income for support.

**Flour equivalent.**—The weight of flour, cereals, meals, pastes, and prepared mixes, approximately 60 percent of the weight of commercially baked goods, and approximately 20 percent of the weight of canned, cooked mixtures, chiefly grains.

**Food at home.**—All food from family supplies consumed at home or carried from home in packed lunches.

**Food away from home.**—All food consumed away from home that was not from family supplies. It may have been either bought or received as gift or pay.

**Food groups.**—The classification of foods into groups having similar nutritive content and use in the diet. In this report, 11 food groups were used. For discussion of foods included in the 11 food groups, see Methodology, Classification of foods, pp. 58 and 59.

**Food list.**—The form for recording the respondent's estimate of the kinds and quantities of food used by the household for a 7-day period. It provides space for recording description of food, quantities used, prices paid for purchased food, information on household composition, and number of meals served from home food supplies during the week to family members, boarders, guests, and paid helpers. In the 1948 food consumption surveys made by the Bureau of Human Nutrition and Home Economics, information was also obtained on family income and family food expenditures and practices during the preceding year. See the National Research Council's bulletin, Nutrition Surveys—Their Techniques and Value (*6*), for facsimile of parts of typical food list used by the Bureau of Human Nutrition and Home Economics.

**Grain products.**—See Flour equivalent.

**Homemaker.**—A woman related to the head of a cooperating family, and responsible for the planning of meals and buying of food for the household of which she was a member.

**Household.**—Includes all persons having meals from family food supplies during the week of the food list—family members, boarders, guests, paid help.

**Household size in equivalent persons.**—The total number of meals served from family food supplies to a household during the week of the food list divided by 21. For the classification used in table 12, fractions were rounded to whole numbers for equivalent persons as follows:

| Range: | *Rounded number* |
|---|---|
| 1.45–2.45 | 2 |
| 2.46–3.45 | 3 |
| 3.46–4.45 | 4 |
| 4.46 or more | 5 |

**Milk equivalent.**—Approximately the quantity of fluid milk to which the various dairy products (except butter) are equivalent in protein and minerals. The factors used in this study were:

| Dairy product: | *Factor for converting pounds of dairy products to quarts of milk* |
|---|---|
| Evaporated milk | 0.93 |
| Condensed milk | 1.12 |
| Dry skim milk | 4.56 |
| Dry whole milk | 3.53 |
| Cream | .33 |
| Ice cream | .56 |
| Cottage cheese [1] | 2.60 |
| American, swiss, bleu, and grated cheese | 3.21 |
| Cream cheese and cream-cheese spreads | .88 |

[1] Based on protein only.

**Nutrition unit.**—A general term referring to any one of a series of units for specific nutrients in which the needs of a physically active adult male are taken as one. See Methodology, page 61, for method of computing equivalent nutrition units.

**Nutritive content per nutrition unit.**—The total nutritive content of food eaten divided by the total number of equivalent nutrition units.

**Sugar equivalent.**—Includes sugar, sirups, molasses, honey, jellies, jams, preserves, candies and candied fruits, dry dessert powders, and dry powdered soft drinks, and approximately 10 percent of the weight of liquid soft drinks, and approximately 20 percent of the weight of ready-prepared puddings.

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