

SUMMER DIETS OF THE POOR IN WASHINGTON, D. C.

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DIETARY surveys of families can contribute much useful information on such questions as the adequacy of the food supply and the frequency of types of deficiencies in the diets of various groups in our population. Such investigations reveal with considerable accuracy the dietary habits of the families studied, and identify families which are not obtaining enough of various types of food to ensure protection against dietary deficiencies. It is obvious that a dietary survey alone will not discover existing cases of specific dietary deficiencies, nor is it usually practical to obtain sufficient information to estimate closely the nutritive requirements for each family. However, records of food consumption will identify families which are subsisting at the time of the survey on a food supply definitely below average requirements and therefore are potential sources of cases of malnutrition or deficiency diseases, and of underdevelopment and retarded growth in children. Improvement in the dietary level of such families must be the objective of a preventive program which is not limited to the restoration of normal nutrition in persons showing signs of malnutrition or undernourishment. The collection of data to define the character of substandard diets and the factors which affect the dietary level and choice of foods will afford information basic to developing a program to improve the adequacy of diets.

Numerous investigations of the food supply of families in different income groups have been made and have revealed the general pattern of the American dietary. These have shown that, as family income decreases, the total amount of food consumed de-

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clines, with the result that the caloric intake diminishes and the quality of the diet becomes poorer from a nutritional standpoint. It appears also from several studies that individual families with the same income show wide differences in the amount spent for food and in the choice of foods. Many families have poor diets although the expenditure for food is sufficient to purchase an adequate, well-balanced food supply. However, the lower the income, the greater is the likelihood that the diet will be unsatisfactory, especially with respect to inclusion of all needed elements for good nutrition and growth of children. The information available on the diets of families with very low incomes is such that real concern for the nutritional health of the millions of persons living on various types of public assistance is expressed frequently by those who have studied such evidence.

A special survey to obtain current information on the adequacy of diets of relief families in Washington, D. C., was conducted in the summer of 1938 by the United States Public Health Service with the cooperation of the Milbank Memorial Fund. Although extensive dietary surveys of low-income families were made in 1935-1936 by the Bureau of Home Economics of the Department of Agriculture, in cooperation with the Department of Labor and the Works Progress Administration, no relief families were included in these surveys. Data on diets of the lowest income groups give indirect evidence on the dietaries of relief families at comparable income levels, but the present survey was undertaken to supplement this evidence with an investigation of several relief groups.

Plan of Study. The plan for this investigation was affected by several considerations which led to the development of an experimental technique for recording diets of families. These considerations were, in brief, a desire to study a representative sample of both Negro and white families which were recipients of different types of relief available in Washington, to compare these families with nonrelief families, and to make the results of the survey available

as quickly as possible. It was decided that 600 families should be the minimum studied, as this would provide 100 families in each of the categories to be included, namely, white and Negro families on the W.P.A. list, families aided by the Public Assistance Department, and self-supporting families. Neither funds nor the staff of trained workers required were available to obtain diet records for this number of families by such intensive methods as weighing foods in the home or making inventories before and after a period for which daily records of purchases were kept by the housewife. A rapid survey which would give a cross-sectional picture of food consumption was chosen as a method that would yield sufficient information to reveal the dietary level of various groups of families. For this purpose, a meal-by-meal report of the food consumed by each family in a two-day period was decided upon for the dietary record.

The meal-by-meal record for a two-day period is a modification of the method of obtaining at a single interview a statement of all food purchased or of the amounts used in the past week. The weekly record of purchases has been utilized extensively for cost-of-living studies and has provided information on family food budgets. For an investigation of the family dietary, estimates of the amount of foods used during the week are necessary, especially for staple articles of diet bought in bulk. It was felt that the errors inherent in any report dependent on memory would be reduced to a minimum if the record were obtained for only two days, and the relatively short time required for each interview makes this method practical for large-scale surveys. The meal-by-meal record centers attention on the foods actually served rather than on purchases and is helpful in making estimates of the amounts of specific foods which were consumed. In giving an itemized account of each meal, and in describing certain dishes served, the informant is reminded of the use of some food items which might easily be forgotten.

One visit was made to each family during the period from June

27 to July 23 to obtain a record of all food consumed by the family in the two days preceding the investigator's interview. The schedule called for a meal-by-meal description of the foods served in these two days, with an estimate by the housewife of the amount prepared and the amount actually consumed by the family. For as many items as possible the housewife estimated the weight or volume of the foods prepared and reported the fractional part of the food eaten if all of it was not consumed. In some cases, the quantity was reported in package units for which the price was given. For a small percentage of the items, the housewife knew the price that she had paid but could not give the amount purchased; for these, estimates had to be made on the basis of price lists obtained from neighborhood stores. Little difficulty was experienced in obtaining such a meal-by-meal statement of the family diet for a two-day period.

Quantities of staple foods which enter into cooking, and certain accessory foods, such as butter and sugar, are not easily estimated for each meal. Therefore, a summary estimate of the amount used in the two days was obtained for the following foods: milk, sugar, bread, flour, cornmeal, butter, other table fats, lard, and other cooking fats. For home-made items in the diet, such as biscuits, cake, and pie, the recipe was recorded and afforded a rough check on the summary totals reported. The recipe or composition of mixed dishes, such as soup, stew, and salads, also was recorded to provide the necessary information about specific foodstuffs consumed.

The error introduced by the estimates of amounts of staple articles affects the caloric content of the diet most seriously and has slight effect on the evaluation of the availability of protective nutrients. Whether the error in reporting on staple items is greater or less than for the weekly record is not known. It is reasonable to assume that the error in reporting the two-day quantities is as likely to be too high as too low and that the average values for a group of families are as accurate as those based on weekly estimates.

Does the two-day record give data which are representative of dietary levels? The answer to this question must be considered with reference to the objectives of the study, and with reference to whether average values for groups of families are to be used or attention given chiefly to appraisal of the diet of individual families. In the case of average food values for a group of families, there is no good reason to consider the averages based on two-day records as less typical of a group than those based on weekly records, especially if the two-day periods studied include equal samplings of different days of the week and are not otherwise biased. Evidence on the period of investigation required to obtain representative data for an individual family is lacking. It is logical that the longer the period for which the diet is recorded, the more definite is the information about the dietary level and variety of foods consumed. The specific foods used will vary during a week, but how much this would affect the character of the diet is uncertain. For evaluating the diet of young children, Burke and Stuart² have used three-day records kept by the mother and have reported that dietary deficiencies noted agreed closely with blood findings. More variety from day to day enters into the diet of older persons but the nature of this and the extent to which it affects the general type of diet needs to be studied. Variability in the diet of the same family at wider intervals, especially at different seasons, also needs further study.

At present, the dietary data provided by family studies are important chiefly for indicating general types of diets purchased at different income levels or by various classifications of families, and for making broad classifications of diets with reference to whether they meet or fall markedly below certain standards for the various essential nutrients. Such analysis of individual family diets, whether based on a two-day record or a weekly record, gives evidence on the frequency of types of substandard diets and gives an indication of

² Burke, Bertha S. and Stuart, Harold C., M.D.: A Method of Diet Analysis. *The Journal of Pediatrics*, April, 1938, xii, No. 4, pp. 493-503.

the variability in food habits of different families at similar levels of income or expenditure, and therefore of the extent to which average amounts for any group are representative. Precise evaluation of the adequacy of the diet for the individual family and an appraisal of its effect on the state of nutrition of members of the family cannot be made from data on food consumption alone. This limitation applies to data obtained over long periods of observation for food consumption as well as to that for short periods.

The Sample. The 602 families included in this study were divided approximately equally between white and colored. Each racial group was subdivided into three groups of about 100 each and composed of: (1) families drawn from the files of the Public Assistance Department, (2) families taken from the payrolls of local W.P.A. projects, and (3) neighbors of the above families who were not receiving assistance. For convenience in making visits to the homes of these families, families were selected from the Public Assistance roll and W.P.A. roll who lived in the northwest section of the City. Names of persons receiving Old Age Assistance were not taken from the Public Assistance files, as it was planned to study diets of families only, and to exclude individuals or one-person families from the study. The relief families in the study may be considered a typical sample of those living in the northwest section and probably are representative of the City in general, but the non-relief families are selected from low-income families with one or more employed workers.

For each family visited a record was obtained of the amount of money received by each member of the family in the preceding two weeks, and inquiry was made as to any additional funds available for current expenses.

Income of Families Studied. Although the families in the survey were all in the low-income group, small differences in income at emergency levels may be expected to affect the adequacy of the diet. For each family, therefore, the weekly income was calculated and

COLOR AND RELIEF STATUS	ALL IN-COMES	WEEKLY INCOME PER COST UNIT				
		Under \$2.67 I	\$2.67-3.99 II	\$4.00-5.32 III	\$5.33-6.66 IV	\$6.67 or More V
PER CENT OF FAMILIES IN SPECIFIED INCOME GROUP						
<i>White</i>						
Public Assistance	100.0	12.9	40.6	33.7	9.9	3.0
W.P.A.	100.0	6.7	17.8	27.8	22.2	25.6
Nonrelief	100.0	7.9	7.9	9.9	13.9	60.4
<i>Negro</i>						
Public Assistance	100.0	32.7	50.4	14.2	2.7	0.0
W.P.A.	100.0	28.3	28.3	17.7	16.8	8.8
Nonrelief	100.0	21.4	21.4	17.9	11.9	27.4
NUMBER OF FAMILIES						
<i>White</i>						
Public Assistance	101	13	41	34	10	3
W.P.A.	90	6	16	25	20	23
Nonrelief	101	8	8	10	14	61
<i>Negro</i>						
Public Assistance	113	37	57	16	3	0
W.P.A.	113	32	32	20	19	10
Nonrelief	84	18	18	15	10	23

Table 1. Number of families in each color and relief and nonrelief group and distribution of families according to weekly income per food-cost unit in dietary survey in Washington, D. C., June 27-July 23, 1938.

converted to an adjusted per capita basis, using the scale of relative cost of providing food for persons of each sex and different ages developed by the Bureau of Home Economics, Department of Agriculture. In this scale, "one food-cost unit" represents the cost of food for an adult male and other persons are counted as fractional "food-cost units" according to the relative cost of food.³ Families were classified into five income groups, using a class interval of \$1.33 per food-cost unit per week. It was estimated⁴ that about \$5.33 weekly income per food-cost unit was necessary in Washington to provide for a family at an emergency standard of living. Three in-

³ For scale of relative food costs, see footnote 5.

⁴ Estimated from cost-of-living data for Washington, D. C., given in INTERCITY DIFFERENCES IN COSTS OF LIVING IN MARCH, 1935; 59 CITIES, by Margaret Loomis Stecker. Washington, Works Progress Administration Research Monograph XII, 1937, 216 pp.

come groups below this level and two above have been used in the present study.

The distribution of families according to these five income groups is shown in Table 1. Among white families, only 13 per cent of those in the Public Assistance group and 48 per cent of those with a W.P.A. employee had a weekly income of \$5.33 or more per cost unit, but 75 per cent of the nonrelief families had \$5.33 or more. Smaller percentages of the Negro families in each relief and non-relief category had incomes above the emergency level of \$5.33 per week per cost unit.

Negro families were larger than the white families, as shown in Table 2, and this accounts for some of the difference in income per cost unit. The income group into which a family was placed was dependent very largely on the size of the family.

Tabulation of Food Data. Total amounts of each food used in the two-day period were obtained for families in each color, type of relief or nonrelief, and income group, and average amounts were computed per equivalent adult unit. The amount per equivalent adult unit for each group represents the per capita consumption

Table 2. Average size of family¹ for groups classified according to color, relief status, and weekly income per food-cost unit in dietary survey in Washington, D. C., June 27-July 23, 1938.

COLOR AND RELIEF STATUS	ALL IN- COMES	WEEKLY INCOME PER COST UNIT				
		Under \$2.67 I	\$2.67-3.99 II	\$4.00-5.32 III	\$5.33-6.66 IV	\$6.67 or More V
<i>White</i>						
Public Assistance	3.9	6.5	4.1	3.1	3.0	2.7
W.P.A.	3.4	4.8	4.7	3.8	2.8	2.4
Nonrelief	3.6	5.9	4.6	3.9	3.9	3.0
<i>Negro</i>						
Public Assistance	4.5	5.8	4.1	2.8	2.3	—
W.P.A.	4.5	6.9	4.6	3.7	2.1	2.5
Nonrelief	4.0	4.6	5.1	3.9	3.8	2.8

¹ Average size of family is average number of persons per household, including related and unrelated persons dependent on money received during time of study, but excluding persons who paid board.

adjusted for differences in energy or calorie requirements of persons of each sex and age.⁵ Average amounts of foods reported were multiplied by 3.5 to obtain weekly values for comparison with other studies.

From the total amounts of each food used, approximate quantities of calories, protein, calcium, and iron available were calculated. The estimated requirements for these nutrients by sex and age differ, and the average daily supply per consumption unit was computed by the scale of the Bureau of Home Economics.

Adjustment in the equivalent nutrition units in each family was made for meals not eaten at home by any members and for visitors sharing meals with the family.

Before considering the food consumption of these Washington families, it is of interest to note the sex and age composition of families in the color and relief and nonrelief categories. As shown in Table 3, the Public Assistance Department families, both white and colored, had a definite preponderance of females and an un-

⁵ The relative scales of nutritional need by sex and age for calories, protein, calcium, and iron, and the scale of relative food cost published by the Bureau of Home Economics are given below. These are taken from "Nutrition—Final Report of the Mixed Committee of the League of Nations on the Relation of Nutrition to Health, Agriculture and Economic Policy." Geneva, 1937.

INDIVIDUALS BY AGE AND SEX	FOOD COST	ENERGY VALUE	PROTEIN	CALCIUM	IRON
Child under 4 Years	60	40	70	150	40
Boy 4-6; Girl 4-7	70	50	80	150	50
Boy 7-8; Girl 8-10	90	70	100	150	70
Boy 9-10; Girl 11-13	95	80	110	150	80
Boy 11-12; Girl 14-19	100	83	110	150	90
Boy 13-15	110	100	110	130	100
Boy 16-19	112	120	110	130	100
Woman 20-74	95	90	100	130**	100
Man 20-74	100	100*	100	100	100
Woman 75 and Over	90	80*	100*	100*	80*
Man 75 and Over	90	90*	100*	100*	90*

* Not specified in publication; values shown are those used in this study.

** Not used in this study; an allowance of 100 was made for women.

The "nutrition unit" is taken to represent 3,000 calories, 70 grams protein, 68 grams calcium, and 0.015 grams iron. The scale is expressed in percentages, 100 indicating the need for one "nutrition unit."

SEX AND AGE GROUP	WHITE FAMILIES			NEGRO		
	P.A.D.	W.P.A.	Non-Relief	P.A.D.	W.P.A.	Non-Relief
TOTAL PERSONS ¹	395	309	361	503	506	336
Per Cent Males	44.3	48.9	48.8	40.4	47.6	48.2
Per Cent Females	55.7	51.1	51.2	59.6	52.4	51.8
Per Cent Under 10 Years	34.6	23.4	21.6	39.8	28.4	28.9
Per Cent 10-19 Years						
Male	13.7	10.3	11.6	13.7	9.1	6.8
Female	12.6	7.7	9.4	14.9	10.5	9.2
Per Cent 20 Years or Older						
Male	12.2	27.5	26.6	6.4	23.9	23.8
Female	26.9	31.1	30.8	25.2	28.1	31.3

¹ Excludes boarders and visitors for meals, but includes all persons in household considered as an economic unit.

Table 3. Sex and age distribution in families classified by color and relief status in diet survey in Washington, D. C., June 27-July 23, 1938.

usually large percentage of children under ten years of age. This relief class included a large number of families receiving aid for dependent children. The W.P.A. families and nonrelief families were not very different in sex and age composition but, among white families, there were more males than females in the age group 10 to 19 years. Apparently employment of older male children, especially on W.P.A. work, was a factor in keeping these families from requiring other welfare assistance.

QUANTITIES OF VARIOUS FOODS CONSUMED

Average Diet of High-Income Families. As local food habits, food prices, and season affect the use of specific foods, the average amounts of various foods used by families with sufficient income to purchase an adequate food supply may be taken as an index of the diet of choice for low-income families under prevailing market conditions in a specific community. The average diet of families with \$6.67 per week per cost unit in Washington during the period June 27 to July 23 is shown in Table 4 and compared with a recommended low cost diet.

The average diet purchased by white families at maintenance income levels was well supplied with foods from each of the food groups required for variety and balance in the diet. The season was a most favorable one for the use of vegetables and fruits, and the amounts reported were considerably above the suggested quantities for an adequate diet at minimum cost. The use of meats, eggs, fats, and sugar also greatly exceeded recommended quantities. As might be expected, very few families used dried fruits or legumes at this season. The consumption of milk and milk-products by each of the high-income groups except the nonrelief white families was much lower than the recommended amount.

Negro families with weekly incomes above \$6.67 per cost unit reported larger amounts than white families of fats, lean meats and fish, grain products and sugar; and the consumption of these foods was greatly in excess of recommended quantities. The amounts of

Table 4. Pounds of specific foods or food groups per adult unit (energy) per week used by white and Negro families with weekly incomes of \$6.67 or more per cost unit in the dietary survey in Washington, D. C., June 27 to July 23, 1938.

FOOD GROUP	MINIMUM COST DIET ADEQUATE ¹	WHITE FAMILIES		NEGRO FAMILIES	
		Non-Relief	W.P.A.	Non-Relief	W.P.A.
Eggs	.56	0.81	0.84	0.95	0.67
Milk Products	10-12	9.23	7.52	6.21	5.13
Fatty Foods	.96	1.51	1.38	2.28	1.78
Butter	—	0.46	0.36	0.48	0.37
Sugar, Syrup, Jellies	.90	1.49	1.20	1.75	1.66
Lean Meat and Fish	1.16	3.63	3.54	4.66	4.87
Total Grain Products	4.33	3.61	3.74	5.00	5.17
Bread and Pastry	2.00	2.03	2.11	1.11	0.56
Potatoes	3.25	2.77	3.61	3.15	2.79
Dried Legumes, Nuts	.57	0.06	0.29	0.20	0.81
Dried Fruit	.45	0.04	—	—	0.15
Vegetables: Leafy, Green, Yellow	1.94	2.92	2.25	2.84	2.89
Tomatoes and Citrus Fruit	1.15	2.44	2.86	1.47	0.69
Other Vegetables	1.86	1.84	2.30	2.33	0.34
Other Fruits		5.39	1.25	3.23	4.33

¹ Derived from Stiebeling, Hazel K. and Ward, Medora: Diets of Four Levels of Nutritive Content and Cost. U. S. Department of Agriculture, Circular No. 296.

vegetables and fruits used by Negro families was fairly similar to the consumption by white families, but there were less tomatoes and citrus fruits in the Negro diet. The consumption of milk products by Negro families was about half the recommended quantity.

The average diets reported in Washington by white and Negro families of moderate income are characteristic of the food consumption of such families living in the southeastern region of the United States. This is evident from a comparison with the average food consumption by white and Negro families found by the Bureau of Home Economics⁶ in surveys made at various periods in 1934-1936. In Figure 1 the average amounts of ten groups of foods used by white and Negro families in the Washington survey, having a *weekly income* of \$6.67 or more per cost unit (nonrelief and W.P.A. combined), are compared with average food consumption reported by the white and Negro families in southern cities whose *expenditures for food per week* were \$2.67 to \$3.32 per food-cost unit.⁷ Although there was a greater abundance of fresh vegetables and fruits in the summer diets in Washington, especially in the diets of white families, the composition of the average dietary is remarkably similar in the two studies.

Nutritive Content of Diet of Higher Income Group. The average diet of the white families in the higher income group was found to be adequate in energy value and to supply amounts of protein, calcium, and iron believed to be sufficient to give a good margin for

⁶ From mimeographed tables, "Diets of Families of Wage Earners and Low-Salaried Clerical Workers Living in Industrial Communities in Three Regions of the United States, 1934-36." Records collected by the United States Bureau of Labor Statistics and analyzed by the Bureau of Home Economics with assistance from the Works Progress Administration. The white families surveyed in the southern region lived in Birmingham, Mobile, or Memphis; and the Negro families lived either in these cities or in Richmond or New Orleans.

⁷ The Bureau of Home Economics classified families according to the amount of money spent for food in one week. Studies of total family budgets by the Bureau of Labor Statistics have shown that families with low incomes spend, on the average, about 40 per cent of their total income for food. The average diet of families with a total weekly income of \$6.67 or more per cost unit may be taken as roughly comparable with the average diet of families spending \$2.67 to \$3.32 per week per cost unit.

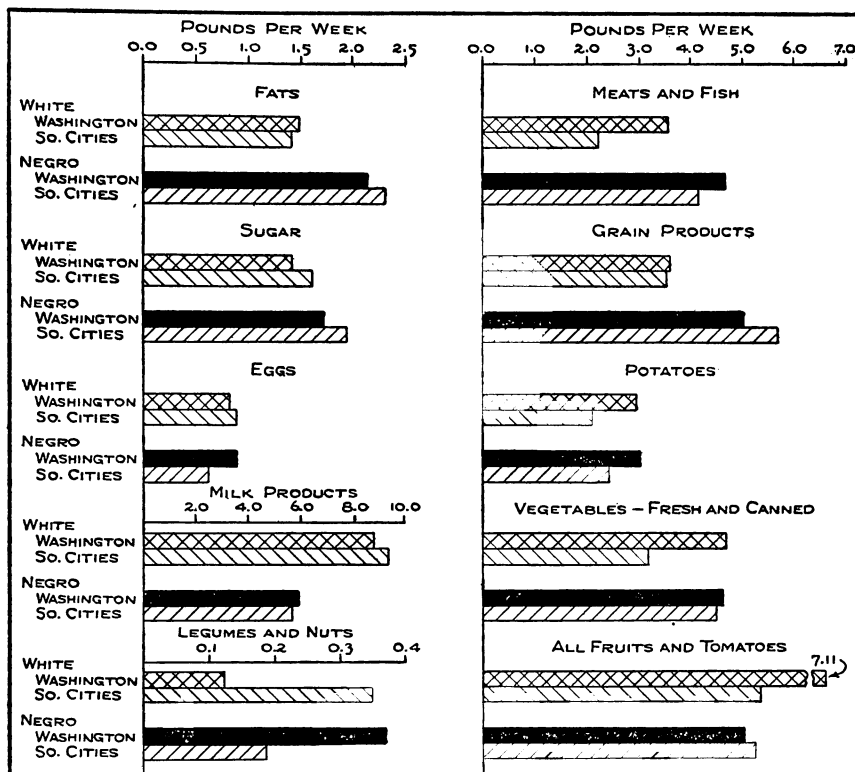


Fig. 1. Pounds per week per adult male (energy unit) of different food groups in summer diets of white and Negro families in Washington with weekly incomes of \$6.67 or more per cost unit compared with food consumption reported by the Bureau of Home Economics for white and Negro families in various southern cities whose weekly expenditures for food were \$2.67 to \$3.32 per cost unit.

safety. The nutritive content is shown in Table 5. The white families had a larger amount of protein than is thought necessary, and some excess in calories,⁸ but the calcium and iron furnished were very close to the safety allowance. This average diet, therefore, was reasonably well balanced and of adequate mineral⁹ content, although the foods used did not represent the cheapest and most fre-

⁸ An allowance for table waste would bring the caloric value of the foods used very close to the 3,000 calories taken as adequate. Although some waste is inevitable, in the present study the estimates of the housewife no doubt include some understatement of amounts used, and there is no good basis available for judging the amount to be allowed for waste.

⁹ No estimate of vitamin content was made, but the vitamin content of the diet of this group would meet usual allowances with the possible exception of B₁.

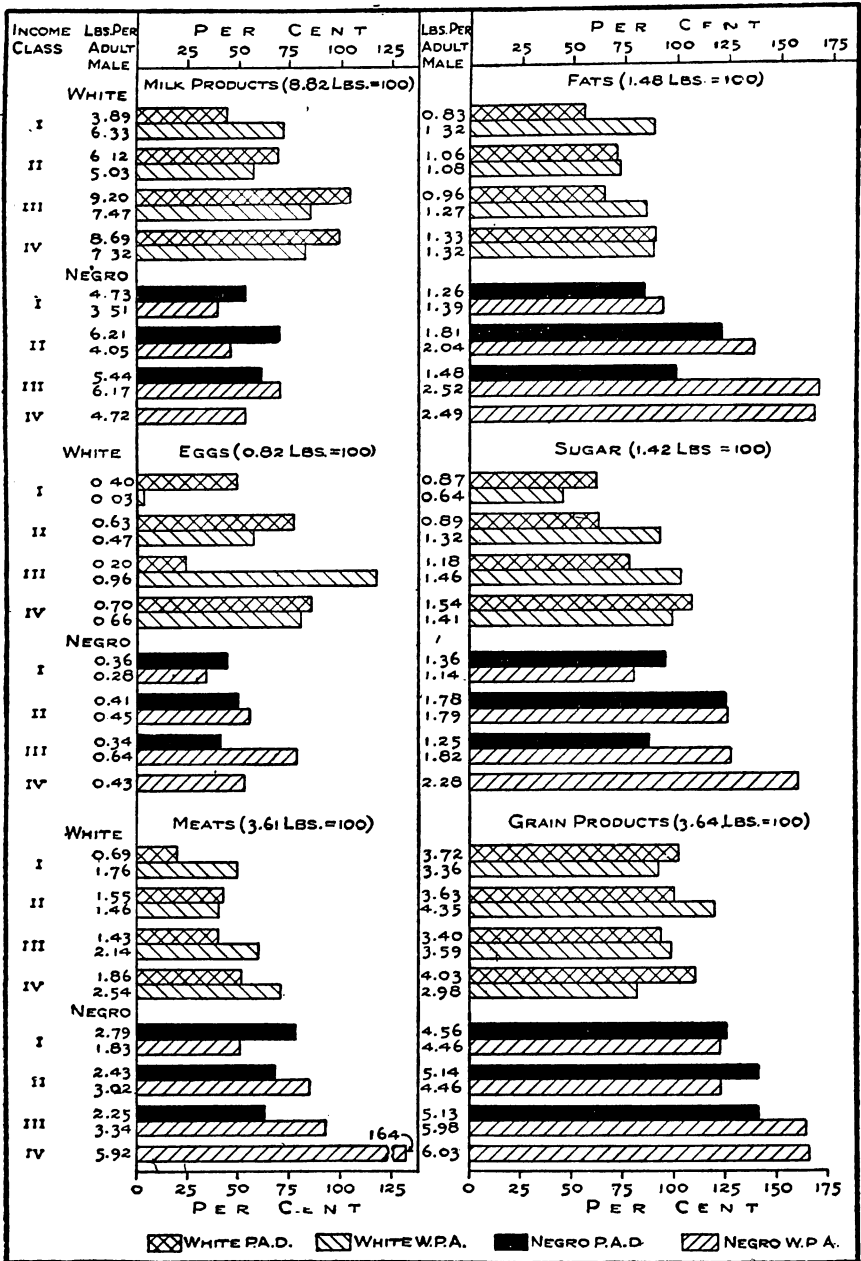
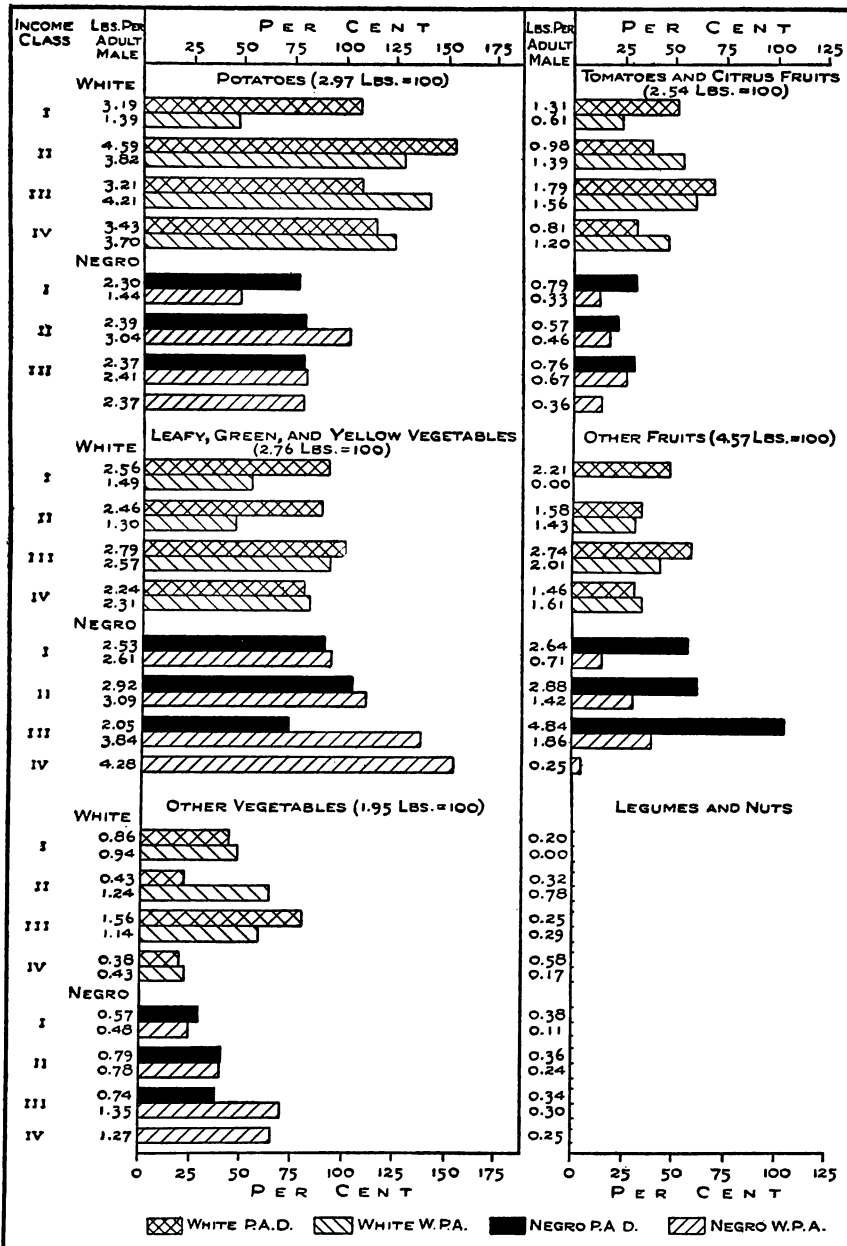


Fig. 2. Ratio of average amounts of various food groups used by white and Negro families at different income levels to amount used by white families with weekly

(Continued on page 19)



incomes of \$6.67 or more per cost unit. Pounds of food per week per adult male are also indicated on the chart for each income group, Group I being families with lowest incomes.

quently recommended sources of specific nutrients for a low-cost diet.

The Negro diet, however, was less well balanced than the diet of white families. It provided less than the recommended adequate allowance for calcium, although the amount was above estimated minimum requirements, and it furnished a large excess of protein and calories.

Food Consumption of Relief Families. The amounts of various types of food used by families receiving money from the Public Assistance Department and by families with a W.P.A. employee, are shown in Figure 2. Average pounds consumed by different income groups classified by color are shown on the chart, and the ratio of these averages to the amount used by white families (non-relief and W.P.A. combined) in the highest income group is indicated by the length of the shaded bars. Relative amounts of the different groups of foods which were consumed at various income levels are clearly shown for the white families. Since the average consumption of Negro families at different income levels is shown as the percentage of the amounts used by high-income white families, the relative change in consumption at different income levels is not indicated for Negro families, but the differences in the use of the food groups according to income are clearly shown, and a comparison of consumption by white and Negro families at similar income levels is readily made.

From the data presented in Figure 2, several broad indications may be noted. It is apparent that the consumption of most types of food decreased as income decreased, and this was true for both white and Negro families. The principal exceptions to this relationship were that white families in lower income groups used, in general, more potatoes than the high-income group, and the consumption of potatoes by Negroes did not vary with income; and white families also had approximately the same amount of grain products at each income level. One other exception to the general

reduction in amounts of foods used that is of interest is the lack of decline in the consumption of leafy, green, and yellow vegetables reported by white P.A.D. families as income diminished. These families received string beans, cabbage, and carrots from the Surplus Commodities Corporation¹⁰ during July, and these foods were used by some families in the two days included in the study. The food groups in which the greatest reductions occurred at lowest income levels were lean meats and fish, tomatoes and citrus fruits, and all other fruits.

Differences noted in the diets of white and Negro families in the highest income group persist at each income level. Thus, the Negroes definitely use more fats, sugars, and grain foodstuffs than the whites having similar incomes; and their consumption of meat and especially of fish also was relatively high. In contrast with the higher use of energy supplying foods, the Negro families consumed less tomatoes and citrus fruit, fewer eggs, and drank less milk than whites having equivalent incomes.

Nutritive Value of Relief Diets. The net effect on the energy value and mineral content of the average dietary which results from the reduced consumption of nearly every food group, is shown in Table 5 and Figure 3.

Both the calcium and iron content of the average diet of white families at incomes of \$5.33 to \$6.66 per week per cost unit for each relief or nonrelief group, dropped below the safety allowance, except the calcium in the diet of the Public Assistance Department group. At each lower income level, the amount of these minerals was further diminished, and calcium available was barely equal to

¹⁰ Commodities distributed during July were: flour, rice, potatoes, butter, dried apples, fresh string beans, carrots, and cabbage. A few other items, such as dried milk and dried beans, appeared on the schedules, and presumably these were carried over from previous months. Families in the P.A.D. group presumably were all eligible for obtaining surplus commodities, but those in the W.P.A. group were eligible only if there were more than four persons in the family. Some surplus commodity was used in the two-day period by 67 per cent of white families and by 73 per cent of Negro families in the P.A.D. group; in the W.P.A. group, 25 per cent of white families and 28 per cent of Negro families reported the use of some surplus commodity.

NUTRITIVE VALUE AND COLOR AND RELIEF STATUS	ALL INCOMES	WEEKLY INCOME PER COST UNIT				
		Under \$2.67	\$2.67- 3.99	\$4.00- 5.32	\$5.33- 6.66	\$6.67 or More
CALORIES—STANDARD ALLOWANCE 3,000						
<i>White Families</i>						
Public Assistance	2,630	2,260	2,620	2,760	3,220	3,040*
W.P.A.	3,000	2,200	2,960	3,130	2,890	3,280
Nonrelief	3,090	2,230	2,540	2,960	3,120	3,420
<i>Negro Families</i>						
Public Assistance	3,340	2,960	3,640	3,140	4,470*	—
W.P.A.	3,360	2,590	3,520	4,380	4,460	4,120
Nonrelief	3,710	3,130	3,450	4,150	3,930	4,200
PROTEIN, GRAMS—SAFETY ALLOWANCE 70 GRAMS ¹						
<i>White Families</i>						
Public Assistance	57	46	59	59	71	67*
W.P.A.	70	53	60	73	69	88
Nonrelief	75	53	58	70	78	83
<i>Negro Families</i>						
Public Assistance	69	65	71	69	101*	—
W.P.A.	71	53	72	86	111	109
Nonrelief	81	71	76	79	77	102
CALCIUM, GRAMS—SAFETY ALLOWANCE .68 GRAMS ¹						
<i>White Families</i>						
Public Assistance	0.44	0.29	0.42	0.55	0.73	0.60*
W.P.A.	0.53	0.45	0.36	0.56	0.59	0.71
Nonrelief	0.62	0.42	0.48	0.58	0.63	0.71
<i>Negro Families</i>						
Public Assistance	0.39	0.33	0.42	0.41	1.14*	—
W.P.A.	0.37	0.28	0.37	0.50	0.60	0.59
Nonrelief	0.40	0.37	0.32	0.37	0.32	0.62
IRON, MILLIGRAMS—SAFETY ALLOWANCE 15 MG. ¹						
<i>White Families</i>						
Public Assistance	10.9	9.4	11.2	11.3	11.6	13.3*
W.P.A.	12.4	8.1	10.7	13.7	12.0	15.0
Nonrelief	13.7	9.2	11.1	12.1	13.0	15.7
<i>Negro Families</i>						
Public Assistance	12.2	11.6	12.8	11.5	15.4*	—
W.P.A.	12.6	9.0	12.8	16.0	17.8	20.7
Nonrelief	14.6	12.7	14.5	14.7	13.3	17.2

* Only three families in the group.

¹ Two-thirds of this amount is estimated to be the minimum requirement.

Table 5. Energy value and mineral content daily per nutrition unit of diets of white and Negro families classified according to relief status and weekly income per cost unit in Washington, D. C., June 27-July 23, 1938.

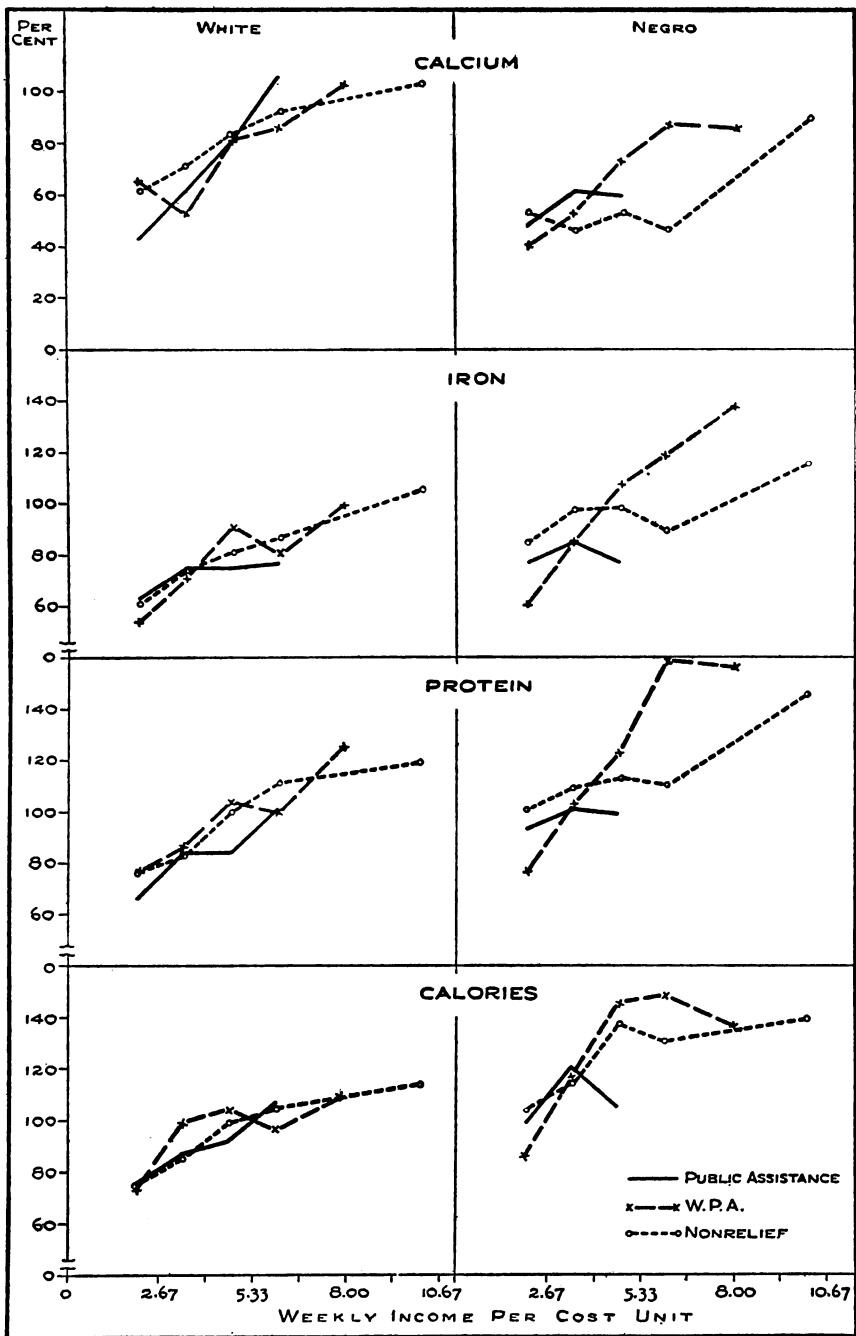


Fig. 3. Per cent of the standard allowances for calories and minerals which was furnished by the average diet of white and Negro families at different income levels in Washington, D. C. See Table 5 for actual amounts and for standard allowances.

or less than the estimated minimum requirement for all groups with less than \$4.00, but the iron available was as low only for the groups with less than \$2.67.

The energy value and the protein content of the average diet of white families were maintained at levels between adequate and marginal at the lower income levels and neither fell seriously below nutritional requirements except for families with less than \$2.67 weekly per cost unit.

Negro families had a diet more than adequately supplied with calories at every income level except the lowest and most groups had approximately an adequate amount of protein even at the lowest income level. The iron content of the Negro diet was intermediate between marginal and safety allowances for groups with low income, except for the W.P.A. group with an income under \$2.67 per cost unit; and, at equivalent income levels, the Negroes had a more adequate supply of iron than the white families. On the other hand, the Negro diet was seriously deficient in calcium at every income level except the highest, and families in this group had less than the suggested adequate allowance. This reflects chiefly the very limited use of milk products by Negro families regardless of their income level, but Negroes also had less calcium than white families from fruits and vegetables.

In summary, diets of both white and Negro families were extremely low in calcium and only slightly better in iron. The average values for families with less than \$4.00 per week suggest that a very high proportion of the families had diets definitely deficient in one or both of these elements. At higher incomes, the average values were somewhat below adequacy for most groups, and it may be assumed that many families in these groups were obtaining a diet too low in calcium and iron to provide a safe margin for health and growth requirements of children.

It is of interest to note that the limited quantity of food received by families on direct relief from the Surplus Commodities Cor-

poration during the study period did not materially affect the dietary level of these families. At equivalent income levels,¹¹ families on direct relief reported essentially the same diet as that reported by families with an employed worker.

CALORIES IN DIETS OF INDIVIDUAL FAMILIES

The distribution of families according to the estimated energy value in the food consumed by individual families is shown in Table 6. Since the source of income made no difference in the average values, the distributions are shown only according to color and income.

It is apparent that the caloric value of the diets did not center around any average or modal value. The range in caloric intake was extremely wide¹² and, for the white families, there was a fairly even distribution over most of the range. Among Negro families there was a tendency for families to concentrate above 3,600 calories per day per adult, but below this amount the distribution flattens out and extends down to a very low number of calories, except for the group with highest income.

The percentage of families with a gross deficiency in calories increased sharply as income diminished. Among white families whose weekly income was less than \$4.00 per cost unit, 14 per cent had a diet supplying less than 1,600 calories per day per adult unit, and 34 per cent had less than 2,000 calories. About 15 per cent of Negro families at this income level had less than 2,000 calories per day. In the income group \$4.00 to \$6.67 per week, 16 per cent of

¹¹ Value of surplus commodities received was not added to money income in classifying families.

¹² The wide range in caloric value of diets purchased by families of similar income is not an unusual finding. Similar variations in calories in the winter diet of white families in North Atlantic Cities has been reported by Stiebeling. See Stiebeling, Hazel K.: Nutritive Value of Diets of Families of Wage Earners and Clerical Workers in North Atlantic Cities, 1934-35. *Monthly Labor Review* (July 1936) of the Bureau of Labor Statistics, United States Department of Labor. From analysis of individual family records of food consumption in one week obtained by the inventory method, Stiebeling showed that among 21 families which spent \$1.20 to \$1.80 weekly for food per cost unit, 9 had less than 2,400 calories daily per energy unit and 5 had 3,300 or more. Since families in the study by Stiebeling were classified by *amount spent for food*, much less variability in the diet would be expected than when families are classified by total income.

COLOR AND WEEKLY INCOME PER COST UNIT	TOTAL	CALORIES PER DAY PER ADULT UNIT							
		Under 1,600	1,600- 1,999	2,000- 2,399	2,400- 2,799	2,800- 3,199	3,200- 3,599	3,600- 4,399	4,400 or More
NUMBER OF FAMILIES WITH SPECIFIED NUMBER OF CALORIES									
<i>Under \$4.00</i>									
White	92	13	18	11	18	7	11	8	6
Negro	194	11	19	16	26	24	18	38	42
<i>\$4.00-\$6.66</i>									
White	113	6	12	18	15	19	19	19	5
Negro	83	4	3	6	6	4	13	19	28
<i>\$6.67 or More</i>									
White	87	3	3	10	11	13	14	19	14
Negro	33	2	0	0	2	2	5	6	16
PER CENT OF FAMILIES WITH SPECIFIED NUMBER OF CALORIES									
<i>Under \$4.00</i>									
White	100.0	14.1	19.6	12.0	19.6	7.6	12.0	8.7	6.5
Negro	100.0	5.7	9.8	8.2	13.4	12.4	9.3	19.6	21.6
<i>\$4.00-\$6.66</i>									
White	100.0	5.3	10.6	15.9	13.3	16.8	16.8	16.8	4.4
Negro	100.0	4.8	3.6	7.2	7.2	4.8	15.7	22.9	33.7
<i>\$6.67 or More</i>									
White	100.0	3.5	3.5	11.5	12.6	14.9	16.1	21.8	16.1
Negro	100.0	6.1	0	0	6.1	6.1	15.1	18.2	48.5

Table 6. Distribution of families according to energy value of two-day diet record for white and Negro families classified by weekly incomes in Washington, D. C., June 27-July 23, 1938.

white families and 8 per cent of Negro families had diets furnishing less than 2,000 calories per man per day. Diets as low as these in energy values are certain to be deficient in most nutrients. The acute shortage of food indicated for some families may have been temporary, but, even if these data do not represent the normal or average food level of these specific families, they suggest the prevalence of much undernourishment in the lowest income groups. Whether the same families subsist at such low dietary levels over sufficiently long periods as to produce deficiency diseases must be studied by other methods.

SUMMARY

A rapid survey method of collecting family diet histories by obtaining a meal-by-meal record for a two-day period is described. The ease and speed with which such a record can be obtained and the small memory error involved make the method advantageous for large scale surveys. Satisfactory average values for groups of families are provided and the individual family records afford suggestive evidence on the types of substandard diets and their frequency.

A two-day diet record for 602 families in Washington, D. C., was taken in the period from June 27 to July 23, 1938. The survey included white and Negro families of three types; namely, families receiving funds from the Public Assistance Department, families with a W.P.A. employee, and neighbor families with an employed worker.

Most of the families on Public Assistance had a weekly income of less than \$5.33 per cost unit (per capita adjusted for sex-age composition), this amount being the approximate income required to maintain an emergency standard of living in Washington. Nearly one-half of the white families and one-fourth of the Negro families in the W.P.A. group had \$5.33 or more per capita.

The average diet of white families with \$6.67 or more weekly per capita provided an adequate safety allowance of calcium and iron, and more than the standard allowance of protein and calories. The Negro diet of high-income families furnished an excess of calories, protein, and iron, but less than the safety allowance of calcium because of the very limited use of milk.

The energy value and protein and iron content of the average diet of families in the lower income groups was maintained at levels between adequate and marginal requirements, except that calories and iron were below estimated minimum nutritional requirements in the average diet of white families with less than \$2.67 weekly per capita. The calcium content of the average dietaries was less than

minimum requirements for nearly every group of white and Negro families with less than \$4.00 weekly per capita and was deficient for some Negro groups at higher income levels.

The calories available in the food supply of individual families showed that a very large percentage of white families reported diets seriously deficient in energy value and many Negro families also had diets very low in energy value in spite of the high caloric value of the average Negro diet.