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UNITED STATES DEPARTMENT OF AGRICULTURE  
Agricultural Research Administration  
Bureau of Human Nutrition and Home Economics

## ESTIMATING FAMILY FOOD COST

Talk by Berta Friend, Family Economics Division, at the  
29th Annual Agricultural Outlook Conference, Washington, D. C.,  
October 30, 1951

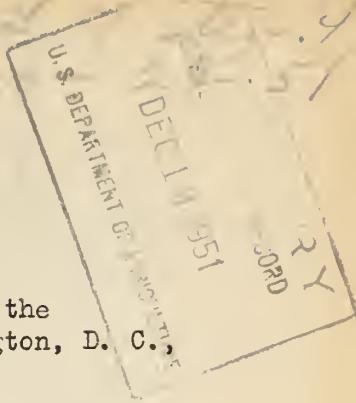
In these days of rising prices, the cost of food is important to many groups of people. Periodically, welfare agencies must determine money allowances that can be expected to furnish adequate diets for recipients. Labor and management groups are interested in the change in food costs from one period to another. Farmers are concerned with the difference between prices received for the things they sell and the prices paid for the things they buy. The homemaker watches the effect of rising prices on her family food budget. Because of this great interest, various measures of food cost have become important in our everyday life and are used to a much greater extent than ever before.

Two general approaches to the measurement of food costs have been used most frequently. One approach is to measure change from time-to-time as is done in the Bureau of Labor Statistics "Retail Food Price Index" and the Bureau of Agricultural Economics "Food and Tobacco Index." The second approach is to give a dollar value for fixed quantities of food as in the Bureau of Agricultural Economics "Market Basket" and in the cost estimates of the Bureau of Human Nutrition and Home Economics low- and moderate-cost food plans. Each of these measures was developed to satisfy a specific need and is of greatest value when used for the intended purpose. Therefore, similarities and differences among these measures of food cost and how they can best be used should be well understood.

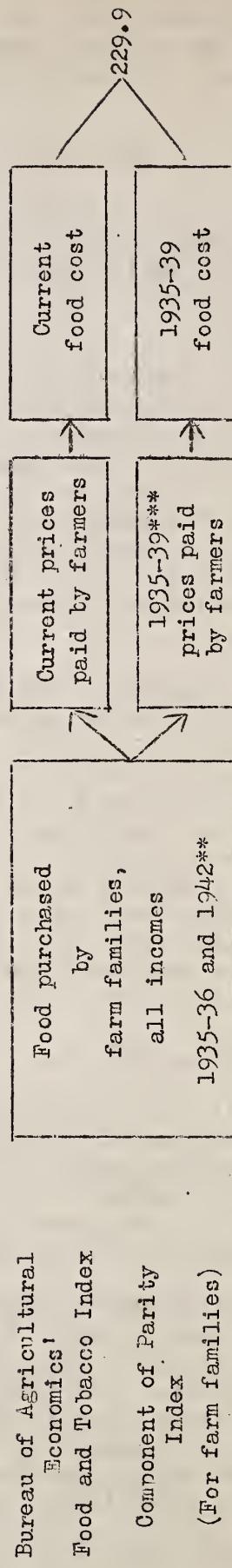
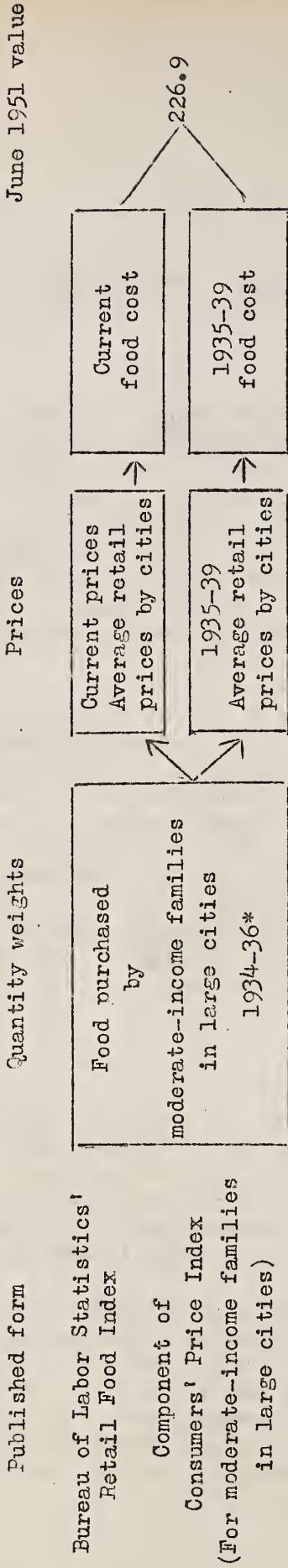
#### The Retail Food Price Index

The BLS' Retail Food Price Index measures time-to-time changes in the retail prices of food purchased by moderate-income families living in large cities. It indicates the relationship between the cost of fixed quantities of food during a base period with the cost of these same quantities at later periods. It is a component of the Consumers' Price Index which was developed during World War I and recently widely used in wage negotiations.

The general method used in developing the Retail Food Price Index is shown in the accompanying chart. The quantities of foods purchased by wage earners and moderate-income families in large cities in 1934-36, were used as quantity weights. The total cost of these quantities for the base period was obtained by applying 1935-39 average retail prices for large cities; the same procedure is repeated monthly using current prices. The relationship between the cost of food at current prices and in the base period is shown as an index.



MEASURES OF CHANGE IN THE PRICE OF FOOD



\*Based on 1934-36 Wage Earners and Lower-Salaried Clerical Workers.  
\*\*Based on 1935-36 Consumer Purchases Study and 1942 Study of Family Spending and Saving in Martime.  
\*\*\*Index published in Rural Family Living converted to 1935-39 base.

Because the rate of price change is one of the most important factors affecting the cost of food over short spans of time, this index provides an acceptable approximation of the change in cost of food for urban workers. On the other hand, it does not take into account any change in spending patterns that occurs over long periods of time. Postwar studies indicate that increased incomes, higher prices, and new processed foods on the market have caused consumers to change some of their buying habits. At present, therefore, the Bureau of Labor Statistics is revising the quantity weights on the basis of its 1950 national expenditure survey. While this is being done, such popular items as frozen foods and canned baby foods have been added to the "Interim Revision" of the food index. Changes made so far in the food sub-group weights are comparatively small.

#### BAE Food and Tobacco Index

The BAE "Food and Tobacco Index" measures time-to-time changes in the retail prices of food and tobacco purchased by farmers. The quantity weights used in the BAE index are based on food purchases of farm families of all income groups in 1935-36 and 1942; the prices are those paid by farmers as reported by stores in which the farmers do their buying.

The primary purpose of this index is to show change in the general level of farm purchasing power. It is part of the Index of Prices Paid by Farmers used in the parity price formula which estimates the difference between what a farmer receives for the products he sells and what he pays for the things he buys.

#### The BAE Market Basket

The BAE "Market Basket" was designed to measure marketing charges and the share of the retail dollar received by farmers. It gives the yearly estimates, in dollar figures, of the "retail cost of 1935-39 average annual purchases of food products by a family of three average consumers."

As the accompanying chart shows the amounts of food upon which this cost is based are the average quantities of "domestically produced farm foods" sold to U. S. consumers in 1935-39. By applying retail prices paid by farmers and BLS average U. S. prices, the current cost, per person, is obtained. This cost, multiplied by three, provides an estimate of the yearly cost for "three average consumers."

Sometimes the cost of the Market Basket is erroneously quoted as representing total cost of food for a family of three--the usual concept of a market basket. Actually, it does not do this because the cost excludes products which are imported such as sugar, coffee, and bananas, foods that are of nonfarm origin, such as fish, and foods consumed in households on farms where produced. During the prewar years, 1935-39, it is estimated that these three categories would have added about one-third to the retail cost of the Market Basket.

MEASURES OF FOOD COST IN DOLLAR VALUES

JUNE 1951 VALUE

QUANTITY WEIGHTS

PUBLISHED FORM

BAE Market Basket  
BAE Food Plan  
Costs

PRICES

Domestically produced  
farm foods purchased,  
per capita\*  
1935-39

Current prices  
BLS, U.S. average  
retail prices by cities  
and  
BAE, prices paid  
by farmers

→  
x 3 →  
\$718 per year  
for 3 average  
consumers

Nutritionally adequate  
quantities of food groups  
used with choices of food  
within groups as shown by  
spending patterns of families,  
spring, 1942\*\*

Current prices  
BLS, U.S. average  
retail prices by cities

Weekly cost for  
a few family types  
and for individuals  
in 19 age and activi-  
ty groups. Example:  
Family of four with  
two pre-school  
children, June 1951  
Low cost.....\$16-\$17  
Moderate cost. \$22-\$23

\*Based on total farm sales. Excludes nonfarm and imported foods such as fish, coffee, bananas, and foods used on farms where produced.

\*\*1942 Study of Family Spending and Saving in Wartime.

A second point that is significant is that this Market Basket measures the cost, at current prices, of the 1935-39 average sales to consumers, and therefore, does not reflect the currently higher level of consumption. To reflect current levels of "total retail food costs for a family of three average consumers," the cost should be increased by about 50 percent. For example, the \$718 estimated for June 1951 increased by 50 percent would be \$1,077. This cost compares more favorably with other estimates of the cost for "total" food.

Bureau of Human Nutrition and Home Economics  
Food Plans at low- and moderate-cost

The last measure of food cost to be described is the weekly costs of the BHNHE low- and moderate-cost food plans currently being published in *Rural Family Living*. These costs were developed primarily to help families select the food plan that would best suit their family budget. They represent the cost of purchasing a week's supply of food that will provide a nutritionally adequate diet if the food is distributed according to need and usual choices of food within specified quantities of food groups are made.

The chart below illustrates in summary fashion how the food plan quantities were developed:

WHAT FAMILIES EAT	EVALUATING GUIDES
Dietary studies show	NRC recommended dietary allowances
Choice of foods	Current prices of foods
Money spent	Current supplies of food
Nutritive value of food used	

Using these the  
Food Economist develop  
FOOD PLANS in terms of groups of food  
for  
Nutritious and  
Budget-wise Family meals

The chart indicates that data from dietary studies were used to provide information on the kinds, quantities, and cost of food used by families at different income levels. In developing the low-cost plan, the food selections of low-income families were considered. For the moderate-cost, choices of moderate-income families were used.

Because studies of food used by families show that diets are not always nutritionally adequate and that food choices are sometimes not the best, "dollar-wise," these points were given consideration in arriving at food plan quantities. However, adjustments to provide nutritive adequacy were kept at a minimum so that the plans would not deviate unnecessarily from family practices.

Menus based on these quantities were then tested by families. The photographs used in "Food for the Family with Young Children" and "Food for Families with School Children" show two of the families that cooperated.

To estimate the cost, choices within each food group as shown by the 1942 dietary study "Spending and Saving in Wartime" are used. Another pricing table based on 1948 spending patterns will be developed as soon as the BLS has completed its revision of the list of foods priced.

The prices used in estimating the cost of the BHNHE food plans are the BLS Average U. S. retail prices for large cities. Average prices vary from one city to another but estimates of the City Worker's Budget indicate that the range is comparatively small. Actually, there may be a greater effect on total cost due to the management of individual homemakers than to differences in cost from one place to another.

How can these costs best be used?

Home Economists are often asked such questions as, "How much should it cost at current prices to feed my family of four?" "Is it possible to provide my family of three with an adequate diet for \$20 a week?" "How much should I plan to allow for food in my family budget?"

The cost of these plans is a measure that can be used to estimate the cost of food for an individual family. Because costs are given for individuals of different ages and degrees of activity, they can be combined to represent a family of any size or composition. This is an advantage as "average" cost figures tend to over- or underestimate the cost for a particular family.

The following illustrates the method to be used in estimating the weekly food bill for two different families of four persons each:

Date: June 1951. BLS, Average U.S. retail prices for large cities

	<u>Low-cost</u>	<u>Moderate-cost</u>		<u>Low-cost</u>	<u>Moderate-cost</u>
Woman moderately active..	\$4.60- \$5.00	\$6.45- \$6.75	Woman moderately active..	\$4.60- \$5.00	\$6.45- \$6.75
Man physically active.....	5.05- 5.50	7.35- 7.65	Man physically active.....	5.05- 5.50	7.35- 7.65
Boy 1-3 years..	2.55- 2.70	3.40- 3.50	Boy 13-15.....	5.20- 5.70	7.40- 7.75
Boy 4-6 years..	3.15- 3.35	4.20- 4.35	Boy 16-20.....	5.65- 6.25	8.25- 8.70
Total.....	\$15.35-\$16.55	\$21.40-\$22.25		\$20.50-\$22.45	\$29.45-\$30.85
Round to.....	\$16.00-\$17.00	\$22.00-\$23.00		\$21.00-\$23.00	\$30.00-\$31.00

This example illustrates the effect of family composition on the cost of food. It shows that the cost of feeding a four-person family with teen age boys is around a third more than that for a four-person family with young children. This may explain in part why homemakers frequently challenge cost estimates that appear in newspaper releases. Costs are usually given on a "per capita basis" or for a family which is designated only as a three- or four-person family. The homemaker tends to identify these amounts with what she spends for food and may find that her costs vary considerably from those quoted because of a difference in family composition. Therefore, when these costs are used for newspaper releases, it is advisable to include both the family size and composition. It is also wise to round the costs to the nearest dollar value and to give a range as is shown in the illustration. Reporting the cost as from \$19.70 to \$21.75 gives the impression of greater precision than is possible in cost estimates. Giving a range in cost will allow for variations due to the foods selected within the groups, and, to the managerial ability of homemakers.

The cost estimates given for individuals assume practices in food selection and preparation typical of a four-person household. To insure meals of equal variety as well as nutritive value for families of smaller sizes, additions of 35 percent may well be made to the individual costs when estimating the cost for a one-person family, 20 percent for a two-person family, and 10 percent for a three-person family. The illustration below shows how this can be done.

	<u>4-person</u>	<u>3-person</u>	<u>2-person</u>	<u>1-person</u>
Woman, Mod. Act. ....	\$6.45*	\$6.45	\$6.45	\$6.45
Man, Phy. Act. ....	7.35	7.35	7.35	
Boy 13.....	7.40	7.40		
Boy 18.....	8.25			
	<hr/> \$29.45	<hr/> \$21.20	<hr/> \$13.80	<hr/> \$6.45
		<hr/> x110	<hr/> x120	<hr/> x135
		<hr/> \$23.32	<hr/> \$16.56	<hr/> \$8.71

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\* Costs given for individuals in Rural Family Living.

Sometimes a 5 percent reduction in cost is suggested for families of seven or more on the assumption that buying in large quantities can effect a saving. Unless this is possible, no reduction is justified. Local supplies and pricing policies should be the determining factor. Many packages and containers are designed for the "average" family of four persons. Therefore, it may be, that the large family buys more of these same units rather than larger units.

These foregoing examples show how the cost of the food plans can be used to estimate the weekly cost for an individual family. Food estimates such as these are valuable when working with a family or for use as illustrations in group discussions.

Other ways in which these estimates can be used are:

1. To evaluate family management practices by comparing the amount spent for food by a family with these estimates for the same family.
2. To estimate the cost of food for a particular member of a family...to answer questions such as:
  - (a) In child care groups, "about how much does it cost to feed a child 1-3 years?"—"a teen age boy?"
  - (b) "About how much is added to the wages paid hired help when meals are included?"
3. To estimate the proportion of yearly income that should be allowed in the budget for food. Using the yearly estimate in relation to income can help evaluate
  - (a) the cost level of the diet the family should or can choose.
  - (b) the effect of home produced food on total money spent for food and on the cost level of the diet selected.

In summary, there are several measures of food cost. Each of these was designed for a specific purpose, an understanding of which will assure the most effective use.

The BLS "Retail Food Price Index" and the BAE "Food and Tobacco Index" measure change in food costs from time-to-time.

The BAE "Market Basket" gives the yearly cost of domestically produced farm foods sold to consumers and is used to measure the spread in marketing charges and the share of the retail dollar received by farmers.

The weekly cost of the "BHNHE Food Plans" are for a nutritionally adequate diet at two food cost levels for a few family types and for 19 age and activity groups. These costs are valuable for use in working with families.

Illustration of methods to use in estimating food costs  
based on the BHNHE low- and moderate-cost food plans

<u>Low-cost</u>	<u>Moderate-cost</u>	<u>Low-cost</u>	<u>Moderate-cost</u>
Woman moderately active... \$4.60- \$5.00	\$6.45- \$6.75	Woman moderately active... \$4.60- \$5.00	\$6.45- \$6.75
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Boy 1-3 years.. 2.55- 2.70	3.40- 3.50	Boy 13-15..... 5.20- 5.70	7.40- 7.75
Boy 4-6 years.. 3.15- 3.35	4.20- 4.35	Boy 16-20..... 5.65- 6.25	8.25- 8.70
<hr/>		<hr/>	
Total..... \$15.35-\$16.55	\$21.40-\$22.25	\$20.50-\$22.45	\$29.45-\$30.85
Round to..... \$16.00-\$17.00	\$22.00-\$23.00	\$21.00-\$23.00	\$30.00-\$31.00

	<u>4-person</u>	<u>3-person</u>	<u>2-person</u>	<u>1-person</u>
Woman, moderately active.....	\$6.45*	\$6.45	\$6.45	\$6.45
Man, physically active.....	7.35	7.35	7.35	
Boy 13.....	7.40	7.40		
Boy 18.....	8.25			
	<hr/>	<hr/>	<hr/>	<hr/>
	\$29.45	\$21.20 x110	\$13.80 x120	\$6.45 x135
	<hr/>	<hr/>	<hr/>	<hr/>
	\$23.32	\$16.56		\$8.71

\* Costs given for individuals in Rural Family Living.