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INDEXES OF LEVELS OF LIVING FOR COUNTIES AND OTHER GEOGRAPHIC AREAS

Talk by Margaret Jarman Hagood, Head, Division of Farm Population and Rural Life, Bureau of Agricultural Economics, at the 30th Annual Agricultural Outlook Conference, Washington, D. C., October 21, 1952

Making level of living indexes is one way to go about the problem of measuring how well farm people are living. Indexes of level of living can be used to supplement the pictures available from analyses of net income and expenditure data when these are available. The greatest utility of the indexes to date, however, has been to provide a relative indication of how well farm families are living by small geographic areas such as counties or small groups of counties for which data on net income and family living expenditures are generally not available.

What we try to measure with level of living indexes (1). In simplest terms, our indexes are trying to measure relatively how well different groups of farm people are living. In a given year this is affected by the current expenditures for family living, by the expenditures of previous years for durable goods that have utility in the given year, by the amount and quality of various types of services provided by the community -- such as schools, hospitals, libraries, roads, etc. In addition to these tangible factors affecting how well farm people live at a given time in a given community or area, a host of other social, psychological, and political factors affect the amount of satisfaction in living experienced by farm families. Our indexes cannot attempt to include these latter types of factors because statistical data on them are not generally available. In somewhat more precise terms, then, our indexes are intended to reflect the average level of consumption or utilization of goods and services, including both publicly furnished and privately secured, that contribute to well-being and provide satisfaction.

Uses of the indexes. The BAE county indexes of level of living of farm-operator families have been used by Extension workers and other people in practical program planning as well as by persons engaged in analytical research. A recent publication of the Extension Service on "How to Develop a Program" stresses the importance of county committees in this process and the need for channeling basic background material to these communities by extension subject-matter specialists and county agents. (2) Among these materials, emphasis is placed on data related to level of living in the county to help in formulating the particular type of program needed in the county.

The basic problem in making level of living indexes. The basic problem in construction of our indexes is to develop a method of selecting and putting together data from the available sources in such a way as to reflect relative variation both geographically and over time in the average level of living of farm families as defined above. The feature of the problem that differentiates it from problems of index construction in most of the other indexes issued by the Bureau of Agricultural Economics is that the concept of what we are trying to measure has not been formulated in terms of commonly used units, such as dollars, tons, livestock units, acres, or man-hours of labor. This means that we have to define the units of the scale in more abstract terms, and that makes the index less readily understood.

Summary of procedures in making the indexes. The details of the procedures used in making the indexes are given in the appendix to the recent publication, Farm-Operator Family Level-of-Living Indexes for Counties of the United States, 1930, 1940, 1945, and 1950, (3) and in earlier publications cited in that report. There is time here only to summarize these and to discuss one or two of the most commonly raised questions about these procedures. The procedures included:

(a) From data available, selecting items to be included in the index. Earlier work based on the 1940 Census provided evidence that an index based on four or five items properly selected could provide a measure of relative levels of living about as satisfactorily as one based on two or three times that number. The key principle in narrowing the selection among the group of items that were available was to retain those which were reflectors of other items in the level of living as indicated by high correlation coefficients.

(b) Developing weights for these items to be used in the process of combining them into one summarizing index. As in selection, the process of weighting involved correlation and factor analysis procedures that assigned weights to the selected items in proportion to the sensitivity of an item in reflecting differences in the total level of living covered by all the items and their correlates.

(c) Scaling the index so that it would have some reference points for interpretation. The index value of the average county of the United States was set as 100 for the year 1945 and this must be taken into account in interpreting the index. A county value of 100 does not mean a perfect situation, or even necessarily an adequate level of living among farm operators in the county. It simply means that farm operator families in that county were about as well off, on the average, as farm operator families in the entire United States in 1945.

Question regarding (a): Why does the index not include items on home production of food?

The index can cover only the core of level of living that holds, at least as a standard, for all parts of the country and all types of farming in the Nation's agriculture. For the country as a whole, the proportion of farm production used by farm households is higher in the areas of subsistence farming than in the better commercial areas. For a more narrowly delimited geographic area, it might be desirable to use some measure of home production of food to differentiate level of living but this was not deemed feasible for an index formula to be applied to every county of the United States. (4)

Question regarding (b): Why does the index formula have a higher relative weight for the possession of telephones than for the value of products sold? The Experiment Station Director raising this question pointed out that certainly gross farm income is a more important factor in affecting levels of living than is the presence of a telephone. The latter point is granted. However, the items in the index are not weighted according to the value of the item per se, but according to the correlations of other items involved in the level of living with each item used. I suspect that a good measure of average net income would get a higher relative weight than telephones, if it had been available for use in making our county indexes. In the absence of such a measure, the average value of sales of farm products was used as an imperfect reflector of net income. It is known that the relation between gross value of sales and net income available for family living varies substantially according to type of farming area and other factors. The correlation and factor analysis procedures used in determining our relative weights indicate that, within the framework of our definitions and assumptions, the variation of counties in proportion of farms having telephones should be relied on as a slightly better indicator of average level of living of farm operators than the variation in average value of products sold.

Question regarding (c): How can one interpret the United States average county increase from a value of 79 in 1940 to a value of 122 in 1950, an increase of 54 percent? (5) This is perhaps the hardest question of all, because it has to be done in terms of an abstract scale. The scale is defined in terms of two points: 100 is the value for the average county of the United States in 1945, the midpoint of the decade; zero on the index scale represents the level of living of farm operators in a hypothetical county of the United States in which there is no income from sale or exchange of farm products, in which no farm operator owns an automobile, no farm has electricity, and none has a telephone. Conceivably, a subsistence level of living could be maintained, but any further reduction would mean negative values that are inconceivable according to standards prevailing in the United States in 1945.

Given these two reference points, one point or one unit on the index scale means 1/100 of the distance between the zero situation and the 100 situation. According to this sort of measuring scale, the average county in the United States increased 43 units between 1940 and 1950, or 54 percent of its 1940 value of 79 units.

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What the indexes show for 1950. (Slide from BAE Neg. 48455-HX). This map has the counties of the United States grouped into fifths according to their values on the indexes of farm-operator levels of living for 1950. The black areas of highest level of living are concentrated in the middle and eastern parts of the Northeastern States, in the Corn Belt and adjacent portions of the Great Lakes Dairy Area, in West Texas, California, and scattered areas of the Mountain and Northwestern States. At the other end of the scale, counties in the two lowest quintiles are almost wholly in the Southeast and scattered parts of the Southwest.

The general regional differences are those to be expected from other data relating to farm income and levels of living. Perhaps the chief value of these indexes to Extension workers is the differentiation they provide among counties or groups of counties within a state. Texas, Illinois, Florida, Missouri, and Kentucky for example have counties ranging all the way from the lowest to the highest fifth.

Change in levels of living of farm-operator families, since 1930. Farmers are generally much better off now than in 1930, but the improvement in their levels of living has not been at an even rate during the period. The depression of the early 1930's affected farmers' living so adversely that even after the slow recovery in the latter part of the decade, about a third of the area of the United States showed lower farm levels of living in 1940 than in 1930. (Slide from map entitled, "Increases and Decreases in Indexes, 1930-1940.") 1/ The two shades of red indicate the location of these areas of decrease was mainly in the middle part of the United States. Areas with over 20 percent decrease in farm level of living show up in the Dust Bowl and in the South Central States. Areas with substantial increase were chiefly in the South Atlantic States and Louisiana.

The war and post-war prosperity of the 1940-50 decade produced a quite different picture. The average level of living for farm-operator families rose in every area of the country. (Slide from map entitled "Higher Indexes in All Areas in 1950 than in 1940,") In general, the greatest relative gains were made in the parts of the South which had the lowest living levels at the beginning of the period. Many areas of the Plains States that had suffered during the 1930's from drought showed higher than average rates of increase. Areas of only moderate increase coincided largely with those indicated on the first map as having the highest absolute values on the index. Thus the effect of differing rates of increase in level of living of farm families has been in the direction of reducing differentials among areas.

1/ In this and the next map, counties were grouped into State economic areas (agricultural) for computing rates of change.

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(2) "How to Develop a Program," Talk given by J. L. Matthews, Extension Service, U.S.D.A., at the Tennessee and Virginia Annual Extension Conference, August 1952. Processed.

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(4) Hamilton, C. Horace, Review of Rural Level of Living Indexes for Counties of the United States, 1940 (Current Bulletin Reviews. Rural Sociology, Vol. 9, No. 2. June 1944, pp. 184-186) and Hagood, Margaret Jarman, Rejoinder to the Review by C. Horace Hamilton of Rural Level of Living Indexes for Counties of the United States, 1940, appearing in Rural Sociology, June 1944 (Current Bulletin Reviews. Rural Sociology, Vol. 10, No. 1 March 1945, pp. 87-90).

(5) Hagood, Margaret Jarman, Some Problems in Construction of Indexes for Measuring Change in Level of Living of Farm Operator Families, Rural Sociology, June 1947.