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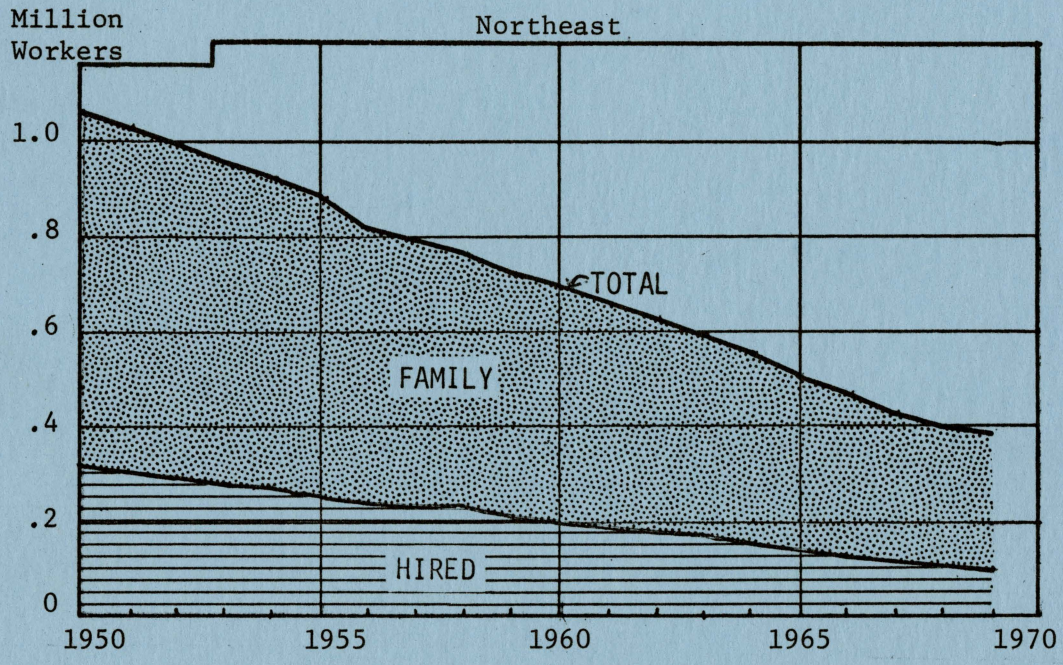
AGRICULTURAL LABOR STATISTICS

WITH SPECIAL REFERENCE TO THE NORTHEAST STATES

FARM EMPLOYMENT



Source of data: Statistical Reporting Service, USDA.

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Department of Agricultural Economics and Rural Sociology
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Prepared Under Contract No. 81-40-68-12
Office of Manpower Research, Manpower Administration,
United States Department of Labor
In Conjunction With
Regional Research Project NE-58
Northeast Agricultural Experiment Stations

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PREFACE

The question, "How many farm workers are there?" seems on the surface to be a reasonable question capable of a reasonably simple and straightforward answer. Unfortunately, it is not. The answer to the question depends on how you define "farm", how you define "farm worker", when and how you count them and a variety of additional considerations. Because of this diversity, the agricultural labor statistics collected and disseminated by various agencies must be used and compared with great care.

This report describes the major series of agricultural labor data and their sources, with particular reference to the Northeast states. Definitions of relevant terms, sampling and estimation procedures, geographic and seasonal coverage, areas and time periods for which the data are available, and other aspects of the estimates are presented and compared. Emphasis is placed on the features of each series that affect comparability or interpretation. Complete discussion of all details in the construction and use of each series could not, of course, be included. The actual estimates from major sources are compared for years since 1950. Finally, suggestions are made for improving agricultural labor statistics reported in the Censuses of Population and Agriculture since 1950.

Only continuing series for which comparable data are available nationally are discussed. Series that include agricultural workers as part of a larger total or do not set out agricultural information separately are not included. In addition to the data discussed, some states publish series for their individual jurisdictions on a continuing basis. Some of these estimates are based on the secondary sources, with Census or other data serving as benchmarks. Others are based on primary data collected by state agencies. In addition, numerous special surveys have been made by governmental, academic and other organizations in which agricultural work force data were collected on a non-continuing basis to serve a specific need. Differences in definitions, coverage, sampling and estimating procedures, both temporal and geographic, are so great that little can be done to aggregate these diverse sources into an accurate and meaningful statistical picture of the agricultural work force.

This is a companion publication to a forthcoming report entitled Agricultural Labor in the Northeast States, a description and analysis of the farm labor force and farm labor problems based primarily on data discussed herein. Both publications were developed in conjunction with Project NE-58, "An Economic and Sociological Study of Agricultural Labor in the Northeast States," a cooperative regional research project of the Agricultural Experiment Stations. For purposes of regional agricultural research the Northeast Region includes Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland and West Virginia.

THIS REPORT WAS PREPARED UNDER A CONTRACT WITH THE MANPOWER ADMINISTRATION, U. S. DEPARTMENT OF LABOR, UNDER THE AUTHORITY OF THE MANPOWER DEVELOPMENT AND TRAINING ACT. RESEARCHERS UNDERTAKING SUCH PROJECTS UNDER THE GOVERNMENT SPONSORSHIP ARE ENCOURAGED TO EXPRESS THEIR OWN JUDGMENT. INTERPRETATIONS AND VIEWPOINTS STATED IN THIS DOCUMENT DO NOT NECESSARILY REPRESENT THE OFFICIAL POSITION OR POLICY OF THE DEPARTMENT OF LABOR.

Numerous persons assisted the authors in the preparation of this report by supplying data, answering questions and reviewing manuscripts. Although the number of such persons is too great for individual acknowledgement, our appreciation to all of them is nonetheless genuine.

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SECTION I. SUMMARY

Farm labor force statistics are chiefly derived from samples of two kinds of respondents. Household surveys essentially count workers, and establishment surveys count jobs. Statistical programs under the two headings vary in many respects including data gathering procedure, sample design, method of expanding the sample estimates into aggregates, reliability of the data, time period to which the data refer and geographic coverage.

The most complete count of people and their occupations is made by the decennial Censuses of Population. This inventory and description of people in the farm work force is detailed and complete enough to present reliable information for counties and other small areas. However, the time of enumeration means that many seasonal farm workers are not classified as such. Other shortcomings of the Census of Population are its infrequency of enumeration and to a lesser extent its failure to enumerate the relatively small number of employed individuals of less than 14 years of age. The presentation of the potential supply of farm workers and their location and characteristics at a particular point in time with a relatively high degree of reliability are desirable aspects of the data.

The infrequent reporting of the more complete counts is overcome somewhat by the series of labor force estimates which are based on the Current Population Survey (CPS) conducted by the Bureau of the Census, U. S. Department of Commerce (USDC). The data published by the Bureau of Labor Statistics (BLS), U. S. Department of Labor (USDL). The estimates measure and describe components of the non-institutional population of working age during a specified week each month. The BLS monthly report contains data dealing chiefly with the total and the nonagricultural labor force, but provides estimates of the size and composition of the agricultural work force at the national level for individuals whose major activity is farm work.

Hired farm working force data are also collected by the CPS for use by the Economic Research Service (ERS), U. S. Department of Agriculture (USDA). They identify workers who did any farm work for wages during the year by kind and amount of work, color, age, migratory status and sex. Earnings from farm and non-farm work are available for each worker category. Reliability of the data could be influenced by the long time interval between employment and enumeration.

Establishment surveys obtain job counts from the employer or place of employment. The quinquennial Censuses of Agriculture accomplish this task with the greatest accuracy. The representative sample used for estimating the labor items is one of the more desirable characteristics of these data. Earlier agricultural censuses contain considerably more detail on farm labor than recently. This has been offset by special surveys that cover farm labor. Such surveys are being conducted as part of the 1969 Census of Agriculture.

Data on farm workers developed by the Statistical Reporting Service (SRS), USDA and the Farm Labor and Rural Manpower Service, U. S. Training and Employment Service (USTES), Manpower Administration, USDL supplement those in the Agricultural Census. However, estimates of the former agency are derived from a sample that is less than representative. The USTES data are for seasonal hired workers only, and in some instances do not cover the entire state. Estimates are reported only when seasonal employment reaches a certain number in an area and data collection procedures are informal. Neither agency includes information on characteristics of the farm work force other than numbers of workers by kind or origin, wages, and length of work week.

Indexes of farm labor productivity developed by ERS and BLS are similar in that they are derived from basic indexes of farm production and of labor input. There the similarity ends; the underlying indexes differ in basic concepts, geographic areas and time periods for which they are available, and in other respects. Each has advantages depending on the phenomenon under consideration.

Agencies producing labor force statistics and users of the data continually seek methods of improving the estimates. They have been aided by a number of ad hoc groups who made many remedial suggestions. To date, few of the recommendations regarding farm labor statistics have

been completely implemented chiefly because of budget restraints and priorities for other kinds of data.

Farm labor data are used by a wide variety of persons and for many purposes. The specific data needed and the form in which they are needed varies with user and use. Actual and potential workers need data for making labor force decisions. These include data on job vacancies, wage rates, fringe benefits, working conditions and requirements for employment, for both local and non-local jobs. Actual and potential employers require data for business planning purposes. They need information on labor market conditions in their area and industry, and on specific workers qualified for employment in their operations if they have job vacancies. Public policy-makers need farm labor data to identify emerging problems and to plan and implement solutions. These data are needed for both micro- and macro-analyses.

The U. S. Training and Employment Service and its affiliated state agencies have the principal responsibility for facilitating the flow of labor market information between employers and workers. This function is difficult in agriculture for a variety of reasons--geographical dispersion, lack of effective channels of communication, awareness or responsiveness on the part of workers, employers, and others. Problems involved in supplying data to migrant workers and their employers represent unique problems. Techniques aimed at obtaining data from, and supplying it to specific target groups that are appropriate for rural areas and seasonal employment changes must be developed and implemented.

Information needed for developing public policy is presently the responsibility of several agencies. Numerous opportunities exist for strengthening and standardizing the work of these agencies so that their efforts are cumulative rather than repetitive. There is a special need for data that disaggregates the agricultural industry into its component parts and into functional geographic areas.

SECTION II. SOURCES OF AGRICULTURAL WORK FORCE STATISTICS

National sources of agricultural work force data fall into two classes, those based on surveys of households and those based on surveys of farms or establishments. Establishment surveys generally provide data on the characteristics of jobs while household surveys generally provide data on the characteristics of workers. Unfortunately, it has seldom proved possible to link the two although much important manpower policy requires essentially that kind of information.

The major household surveys of the agricultural work force are the decennial Census of Population and the monthly Current Population Survey. The latter is conducted by the Bureau of the Census and serves as the basis for the household data released monthly by BLS and the Hired Farm Working Force (HFWF) series published annually by ERS. There are several major establishment series gathered by various agencies. These include the Census of Agriculture taken every five years, a mail survey conducted monthly by SRS, quarterly surveys made by the same agency, and a series maintained by USTES and published irregularly.

Household Surveys

The series based on household surveys have similar objectives, namely to provide an estimate of the numbers of persons in the agricultural work force and to enumerate certain characteristics of them and their households. The surveys differ largely in the characteristics enumerated and in the size of the sample, and therefore, the geographic areas for which reliable estimates can be made.

Problems in comparability exist, principally involving time periods to which the estimates refer. Great seasonal variation in size, composition and location of the agricultural work force tends to itensify this problem. The ERS Hired Farm Working Force series report the total number of persons who did farm work for wages any time during the year. The BLS labor force data report the number of persons doing farm work primarily during a reference week each month.

1950 Census of Population. The Census of Population consitutes the only attempt to make a complete enumeration of the national population (*1*).[1/] Information is also obtained regarding size, residence, and general characteristics of the labor force and non-labor force populations.

[1/] Italic numbers in parentheses refer to items in Literature Cited, p. 72.

It is useful in this review as a source of data on actual and potential members of the farm labor force. Data are available for states, counties, and other areas within states. Urban areas are reported by various size of population categories. Rural places are subclassified into farm and non-farm.

The 1950 Census was taken in April as mandated by law. Enumeration actually started on the first of the month. It was two-thirds complete by mid-April in the Northeast and nine-tenth complete by the end of the month.

Although the Census attempts to obtain a questionnaire from every household, some data are estimates based upon a 20 percent sample. Data on employment status, occupation group, industry group, income of persons and families, and other items are sample based. Aggregates of these data were derived by multiplying the sample results by five. In practice, these estimates are obtained by designating every fifth line on enumerative lists as a sample line. The persons enumerated on these sample lines were asked the sample questions. Although this procedure did not completely fulfill the requirements of a 20 percent sample, the validity of the method is indicated by the achievement of a 19.94 percent sample in the Northeast.

In addition to small errors introduced by sampling and enumerators, some error from under-enumeration is also present. On the basis of quality checks, under-enumeration for the entire United States was estimated to be 1.4 percent or 2,100,000 persons (with a standard error of .2 percent). However, the net error for under-enumeration for the Northeast was only .8 percent.

The data regarding employment status were for the calendar week preceding enumeration. Therefore, the "census week" varied somewhat among individuals.

Several other general definitions also have broad relevance to interpretation. For example, only those individuals 14 years and older were included in the labor force. Their place of residence was where they slept and lived most of the time. If individuals or families were temporarily away from this place, information was obtained from neighbors. This included some migrant workers; they were not enumerated in the area where they were working unless they had no usual place of residence.

If a worker was employed on more than one job, the job at which the individual worked the greatest number of hours during the "census week" was reported. The experienced unemployed were classified according to the last job held. Other explanatory definitions are listed below.

I. Labor force status

A. Employed - Civilians who:

1. Worked for pay or profit, or on their own farm, or worked 15 hours or more without pay in a family enterprise.

2. Had a job from which they were temporarily absent.

B. Unemployed - Civilians who did not work but either looked for work or would have looked if able to do so.

C. Total Labor Force - All persons classified as employed or unemployed and members of the armed forces. The "civilian labor force" excludes the latter.

D. Experienced Civilian Labor Force - Employed and unemployed who had previous work experience.

E. Not in the Labor Force - All civilians not classified as employed or unemployed including persons doing only incidental unpaid family work, inmates of institutions and students.

II. Residence

A. Rural - Farms and other places having fewer than 2,500 inhabitants.

B. Urban - Incorporated and unincorporated places having 2,500 inhabitants or more.

C. Rural Non-Farm - Places outside urban areas that were not farms. Farm definition agrees with that used in the 1950 Census of Agriculture.

III. Occupations[2/]

A. Farmers and Farm Managers -- A farmer is one who, as owner and tenant, and a farm manager is one who, as a paid employee, operates a farm for the production of crops,

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2/ In detailed presentations, data pertaining to farmers and farm managers are often reported separately. Data on other farm occupations are often combined under the heading Farm Laborers and Foreman. Farm occupations were last defined for the 1940 Census (2) and those listed are adapted from these definitions except for Farm Service Laborer: Self-employed. This definition is adapted from a catalog of occupations. (3)

plants, vines, and/or trees (forestry operations excluded), and/or for the rearing of animals and the care of their products.

B. Farm Foreman -- One who directs farm laborers, under the supervision of a farmer or a farm manager.

C. Farm Laborer: Wage Worker -- One who, as a hired worker, works on a farm at one or more of the processes involved in the production of crops, plants, vines, and trees (forestry operations excluded), or in rearing animals and caring for their products.

D. Farm Laborer: Unpaid Family Worker -- One who, as an unpaid member of a farm operator's family, works on a farm at one or more of the processes involved in the production of crops, plants, vines, and trees (forestry operations excluded), or in rearing animals and caring for their products.

E. Farm Service Laborer: Self-employed -- Operates or manages, with or without additional workers, a wide variety of machines on a toll basis for farmers. Purchases equipment and supplies and hires workers if needed. Arranges custom jobs, compute charges, collects payment for services rendered, and keeps records of financial transactions.

Data in the 1950 Census does a sketchy job of describing the farm work force. The 10-year span of time between censuses and the early season time of enumeration tend to lessen usefulness of the data for describing characteristics of people who reside on farms or in rural areas. Information on the residence and general characteristics of the experienced unemployed is helpful in assessing a potential source of workers.

1960 Census of Population. The data gathered and published in the1960 Census were similar to those for 1950. However, there was considerable difference in enumeration procedures. The 1960 Census was largely self-enumerated; approximately 80 percent of the data were gathered in this manner (*4*). Advance Census Reports were sent to every household in the country the last week in March. These reports, although not eliminating the need for house-to-house canvas to collect and edit responses, resulted in lowering the work-load of enumerators. This accelerated the actual data gathering process so that 85 percent of the enumeration was completed by April 15. The comparable figure in 1950 was 67 percent. These procedures may have had some effect upon the nature and extent of the errors found in the 1960 Census. A more detailed discussion of the collection of data is available (*5*).

Considerably more data in the 1960 Census, than previously, consisted of estimates based upon a sample. Statistics on social and economic characteristics of the population such as employment status, occupation, industry, and earnings were based on a 25 percent sample; the former rate was 20 percent.

The enumerator assigned each housing unit or person a letter key (A, B, C, or D) upon his first visit to an address. Starting letters were selected at random but each "A" unit or person was in the sample and answered the sample questions. This procedure resulted in a high degree of sampling efficiency which was estimated to be 25.07 percent of the population and 24.95 percent of the housing units.

The system for expansion of sample information employed in 1950 was replaced by a "ratio estimation" procedure in 1960. Basically, this method involved the stratification of the sample data by sex, age, color, tenure and relationship to household head. The ratio of the complete count to the sample count for each state was determined and an expansion factor calculated for each group. The improved method resulted in less sampling error and bias.

Under-enumeration was estimated as 2.0 percent, or in absolute terms about three and a half million people.

Definitions of labor force status were similar between the 1950 and 1960 Censuses. Labor force information was again for the week preceding enumeration. Individuals 14 years or older were included in the labor force and at the "usual place of residence." If after several attempts, information at the usual place of residence was unavailable, data were gathered from neighbors. Double counting of workers was avoided by classifying them in the activity at which they spent "the greatest number of hours" during the week. Information regarding the experienced unemployed was referenced to the last job held. Definitions of employment and related items are listed below.

I. Labor force status.

A. Employed - Civilians who:

1. Worked for pay or profit, or on their own farm, or worked 15 hours or more without pay in a family enterprise.

2. Had a job from which they were temporarily absent.

B. Unemployed -- Civilians who:

1. Did not work but were looking for work or had made such an effort within the last 60 days or would have looked except that they were ill or believed no work in their line or community was available.

2. Were laid off or furloughed and waiting to be called back to a job or to a new wage or salary job.

C. Total Labor Force -- All persons classified as employed or unemployed and members of the armed forces. Civilian labor force excludes the latter.

D. Experienced Civilian Labor Force -- Employed and unemployed who had previous work experience.

E. Not in the Labor Force - Persons not classified as members of the labor force including those doing only incidental (less than 15 hours per week) unpaid work. Examples: Students, housewives, and seasonal workers enumerated in an off season who were not looking for work.

II. Residence

A. Rural - Farms and other places having fewer than 2,500 inhabitants.

B. Urban - Incorporated or unincorporated places having 2,500 inhabitants or more. (Changed from 1950 to include urban towns in New England and urban townships in New Jersey and Pennsylvania which are not incorporated.)

C. Rural Non-Farm - Residences that did not meet the acreage or sales requirements of a farm or rent was paid for a house but not for land. Farm definition agrees with that used in the 1959 Census of Agriculture.

III. Occupations[3/]

A. Farmers and Farm Managers.

B. Farm Foreman.

C. Farm Laborers: Wage Workers.

D. Farm Laborers: Unpaid Family Workers.

E. Farm Service Laborers: Self-employed.

3/ Definitions same as in 1950, see pages 6 and 7.

Comparatively few detailed demographic tabulations relative to farm workers are presented in the 1960 Census of Population. Furthermore, the seasonality associated with agricultural employment precludes an accurate appraisal of the size or composition of this work force by using a point in time, particularly the first two weeks in April. Large increases in the agricultural work force during the relatively short growing season which follows the enumerative period in the Northeast contributes to this understatement. The Census accurately reflects the number of farm workers nationally at the time of enumeration as migrant workers are counted at their usual place of residence. But few of these workers are included in the Northeast. Also not counted are short-time and underage workers who enter the farm work force later in the year. Furthermore, with agricultural technology changing rapidly, the lack of currency in Census data requires that its use in assessing the size and character of the farm work force be specific and qualified.

BLS Labor Force Estimates. The Current Population Survey upon which these series are based is conducted monthly by the Bureau of the Census. Labor force statistics from the CPS, along with other information based on data from establishments, are published by BLS (6).[4/] Although this publication includes more data on the total labor force and on nonagricultural sectors, national estimates of many aspects of agricultural workers are reported. Statistics descriptive of the employed and unemployed members of the current labor force are also provided. Consequently, knowledge of both the demand for and supply of certain workers can be gained from the information. The following general review of the series places emphasis on their value as a source of data on the agricultural work force.

Data are gathered by personal interview, although if households prefer telephone interviews are arranged. About 60,000 households are designated for interview each month, of which about 50,000 consisting of about 105,000 persons, finally are included in the monthly sample.

The week of the month including the 12th day is the reference week. At the present time, the actual interviews are usually conducted the following week by about 950 specially-trained and closely-supervised

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[4/] The labor force data first appeared in this publication in July 1959; from then until July 1969, its title changed somewhat. Previous to July 1959, the labor force estimates were published by the Census Bureau (7).

enumerators. Various techniques are employed to reduce or eliminate errors attributable to poor interviewing procedure. A detailed explanation of these techniques as well as other sources of sample errors and the methods utilized to minimize them are published (8). Additional explanations of all aspects of the Current Population Survey are also available (9). Other technical reports discuss the accuracy of the published data over longer periods of time employing various checking techniques. In general, these investigations agree that the employment estimates are reasonably accurate. Budget restraints enforce some trade-off between cost and accuracy, particularly at the margin.

Definitions of the statistical items are published monthly. The following summarizes those related to agricultural work force information.

I. Employed

A. Persons 16 years and older who during the survey week did any work at all as paid employees, in their own business, profession or on their own farm, or who worked 15 hours or more as unpaid workers on a farm or in a business operated by a member of the family.

B. Persons who were not working but who had a job from which they were temporarily absent because of illness, bad weather, vacation, labor-management dispute, or personal reasons, whether or not they were paid by their employers for time off, and whether or not they were seeking other jobs.

II. Unemployed -- Persons who had no employment during the survey week, but were available for work and had actively sought work within the past four weeks, or were waiting to be called back from layoff or had a new job waiting.

III. Total Labor Force -- Employed and unemployed in accordance with the previous definitions, including members of the armed forces. The "civilian labor force" excludes the latter.

IV. Full- and Part-Time Labor Force

A. Full-time - Worked thirty-five or more hours a week or involuntarily worked fewer hours during the week or unemployed but seeking full-time work.

B. Part-time - Worked fewer than 35 hours voluntarily and unemployed but seeking part-time work.

V. Not in the Labor Force -- All persons not in above categories, such as:

A. Persons engaged in housework in own home.

B. Students.

C. Persons doing incidental unpaid family work (less than 15 hours in the specified week).

D. Persons unable to work.

E. Seasonal workers for whom the survey fell in an off-season.

VI. Occupation, Industry and Class of Worker

A. Employed - Job on which the person worked the most hours.

B. Unemployed - Last full-time civilian job lasing two weeks or more.

In January 1967, the minimum age for inclusion in the labor force was raised from 14 to 16 years of age and other concepts were changed (*6*, Febr. '67). Estimates for most major series were revised back to 1947 on an annual basis and for 1966 on a monthly basis to reflect the new age floor. However, data on the employment status of 14-and 15-year-olds are published separately each month which permits converstion of current estimates to the 14 and over basis.

At the same time, the quantity of current data published were enhanced by adding information on employment status for a more detailed breakdown of characteristics of persons such as age and color, including activity of those not in the labor force. In addition, data based on hours worked during the survey week such as full- and part-time status were added. Publication of hours worked by classes of agricultural workers ceased but they are available on request. In June 1968, data published were again increased by adding information on reasons for being unemployed.

The survey provides information at the national level for useful classifications of farm workers: (1) wage and salary workers, (2) self-employed workers, and (3) unpaid family workers. Another classification for occupations are: (1) farmers and farm managers, and (2) farm laborers and foremen: with the latter often subdivided into paid workers and unpaid family workers. Data on the agricultural work force by age, sex, color, hours worked per week as well as some classifications of the unemployed for the survey week each month are published.

The BLS labor force data are useful principally in giving an indication of the size of the adult agricultural work force on a national basis. Data on characteristics of workers by month can be used to determine to some extent how the size and composition of this work force changes seasonally. In addition to information released by BLS each month, supplements are added to the CPS questionnaire for certain months. Various subjects are covered in the supplemental questions such as migration, income by source, marital status, educational attainment, work experience, and school enrollment. While many of these supplements help describe the farm labor force, they are not detailed here because of space limitations.

Results of supplemental questions on multiple jobholding, which currently are asked in May of certain years, indicate that an increasing proportion of people who work on farms are classified as nonagricultural workers by BLS (*10*, May '63, Mch. '64, Mch. '65, Febr. '66, Oct. '67 and Aug. '70). This results because: (1) employed persons are counted only once and are classified according to industry in which they worked the greatest number of hours, (2) the strong tendency to work the standard 40 hours a week in nonagricultural jobs, and (3) the increasing tendency to combine part-time farming with a nonagricultural job.

The following aspects of the survey also limit usefulness of the information with particular reference to agriculture.

1. Youth under 14 years of age are not covered.
2. Unpaid family members who work fewer than 15 hours during the week are not included.
3. Characteristics of employing farms such as type and size are not obtained.
4. Unavailability of information on a regular monthly basis for areas smaller than the nation. However, annual data for 1968 for two types of geographic areas were released recently (*10*, Oct. '69 and Jan. '70). They consist of employment status and other information for persons by (1) major type of residence (essentially, large metropolitan areas, small cities and towns, and farms), and (2) nine regions and ten large states.

ERS Hired Farm Working Force. This body of data is based on information obtained for the Economic Research Service and predecessor agencies by the Bureau of the Census through supplementary questions on the Current Population Survey for one month each year.[5/] Beginning in 1961, the supplemental questions have been asked each December. Certain previous years, they were asked in January or February. If an affirmative answer is received to a screening question designed to identify persons who did farm wage work during the year, additional questions are asked relating to days of farm wage work and farm wages, migratory or nonmigratory status, non-farm wage work and associated wages, chief activity during the year and other characteristics (11) and (12).[6/] Thus, the number of people who did any farm wage work during the year are estimated along with their characteristics and earnings. Estimates are made for the nation and in less detail for four regions. The Northeast region contains the New England and Middle Atlantic States.

Persons who did farm wage work during the year but who died, entered the farmed forces, or were otherwise removed from the civilian noninstitutional population before the survey are not counted. This means that foreign workers who did farm wage work in the United States but had returned to their homes before the survey was conducted were not included. The total number excluded probably does not exceed 400,000 in any year and many fewer than this number in recent years. Other definitions of significant items are listed below.

I. Employment

A. Farm Wage Workers - Persons 14 years old and over in the civilian noninstitutional population at the time of the survey who did any farm work for cash wages or salary during the year.

B. Farm Work for Cash Wages:

1. Work done on any farm for cash wages in connection with the production, harvesting, threshing, preparation for market, or delivery to market for agricultural products.

5/ See the previous section for a description of the sample, estimating techniques and other aspects of the CPS.

6/ Since 1963, the annual reports have been in the USDA, Agricultural Economic Report series and for most previous years were in the Agricultural Information Bulletin series.

2. Work done off the farm, but involved in running the farm business.

3. Repair of farm buildings if done along with other farm work.

C. Types of Workers

1. By duration.

a. Casual Workers - Persons who did fewer than 25 days of farm work.

b. Noncasual Workers - Persons who did 25 days or more of farm wage work, including:

(1) Seasonal Workers - Persons who did 25-149 days of farm wage work.

(2) Regular Workers - Persons who did 150-249 days of farm wage work.

(3) Year-round Workers - Persons who did 250 days or more of farm wage work.

2. By migratory status.

a. Migratory workers.

(1) Persons who left their homes temporarily overnight to do farm wage work in another county within the same state or in a different state with expectations of eventually returning home.

(2) Persons who had no usual place of residence, if they did farm wage work in two or more counties during the year.

b. Nonmigratory workers.

(1) Persons who worked in home county only.

(2) Persons who worked in one county for part of the year and made a more or less permanent move to another county and also did farm wage work in the second county.

(3) Persons who commuted daily across the county or state line to do farm wage work and returned home each night.

II. Chief Activity

A. Farm Wage Work - Reported if a person spent most of his time at farm wage work.

B. Non-farm Work - Reported if a person spent most of his time in his own business or profession, working without pay in a family business, or working for pay in any non-farm activity.

C. Unemployed - Persons who spent most of their time without employment, but actively looked for a job.

D. Other chief activity included other farm work (operating a farm and unpaid family labor), and not in the labor force (keeping house, going to school and other).

III. Residence

A. Farm Residents - Persons living in rural territory at the time of the survey on places of 10 acres or more that had $50 in sales. Places of less than 10 acres are included if sales totaled $250.

B. Non-farm Residents - Persons living in urban places, rural towns or villages, or in open country on places that are not farms.

IV. Earnings from Farm or Non-farm Work - Total cash wages or salary received for farm work or non-farm work. Perquisites or fringe benefits are not included.

The data are published annually. The report is chiefly devoted to information for the current year but some historical data are included. Annual estimates of farm wage workers by various combinations of age, sex, color, migratory status, place of residence and length of employment are presented. Days worked and wages earned on a daily and annual basis for both farm and non-farm wage work are shown for these and other characteristics of workers.

The data provide unique information regarding the size, composition and mobility of the hired farm labor force. The information on duration of and earnings from farm and non-farm work provides insight into the tenure of farm employment and the characteristics of workers of various tenure classes.

Despite the versatility of the data, they also have limitations. The accuracy of information gathered once a year from individuals about periods of farm and non-farm employment and earnings throughout the year is open to question. In depth interviewing techniques are used to

stimulate memory but biases resulting from lack of total recall probably continue to exist as it does in all enumerations containing questions about the past. The age categories, although useful and finely delineated, provide no indication as to the number of farm wage workers under 14 years of age. Comparison of data from this survey with those on monthly employment from the Statistical Reporting Service suggest that the number of workers just under this cutoff age is substantial, particularly among short-time or "casual" workers. The survey sample yields reliable estimates only for the nation and large regions. Information is not obtained about when the work was performed or its geographic location. While farm wage workers who were also farm operators or unpaid family workers are identified and described, information is not collected on type of work done.

Establishment Surveys

The various establishment series have somewhat different objectives. The USTES estimates of seasonal workers are primarily concerned with source and migratory status. The principal objective of the SRS monthly mail survey is to provide estimates of farm employment and wage rates. The SRS quarterly survey has the same general objectives but differs greatly in several respects. The sections of the U. S. Agricultural Census devoted to farm labor also seek to estimate the size of the agricultural work force along with characteristics of farms on which they work.

The establishment surveys generally include all employees, including part-time or short-time workers who are working at the time of the survey. The following discussion presents information on the outstanding features and contents of each series.

1950 Census of Agriculture. This was the last Agricultural Census enumerated in the spring. The average dates of enumeration for the Northeast states were April 15 to April 28. A continued awareness of the enumerative period is necessary when interpreting the data on farm labor (*13*).

Information was obtained through the mailing of questionnaires addressed to rural box-holders. They were completed by enumerators who also obtained information required for the Census of Population and Housing. Statistics regarding number of farm workers and wage rates are for the week preceding enumeration.

Some of the information, including that on the farm work force, is based on a sample of farms. The sample contained all large farms and 20 percent of the remaining farms. Large farms in the Northeast (large Western farms were defined differently) were those which had 1,000 acres or more of all land, 750 acres or more of cropland, 200 or more cattle, 500 or more sheep, or sales of $70,000 or more. Nationally, large farms numbered about 60,000.

Samples were subject to adjustments to improve the reliability of the data and reduce enumerator bias. Farms included in the sample were adjusted to conform to the distribution of all farms by size and economic class. These adjustments were small, averaging three percent eliminated and two percent duplicated for all areas in the United States.

As in indication of reliability, chances are two out of three that the farm labor estimates from at least 2,500 farms vary from complete counts by less than 4.4 percent. Estimates involving pay arrangements and wages, however, may be in error by a slightly higher percentage. Deviations from actual counts will naturally be greater when estimates are applied to a smaller number of farms.

Age limits did not apply to the farm labor questions which were designed to obtain number of workers employed "on this place." Items tabulated include operators, unpaid family labor and hired labor, both regular and seasonal. Hired workers were tabulated by pay arrangements, wage rates, hours worked and kind of certain perquisites received. Information relative to the above items is available by states, counties and economic areas within states. Economic area tabulations contain some information not available for individual counties.

The following are brief definitions of some of the more pertinent items:

I. Farm - A place of three acres or more and value of production of $150 or more. Places of less than three acres were counted as farms if sales amounted to $150 or more.

II. Farm Operator - One who operates a farm either performing the labor himself or directly supervising it.

III. Unpaid Family Labor - Members of the operator's family who worked 15 or more hours during the specified week.

IV. Hired Workers - Persons who performed any work for pay during the reference week. Regular hired workers worked 150 days or more on this place and seasonal workers worked less than 150 days.

Data obtained describe rather thoroughly the number of workers on farms during the reference week by tenure, type and size of farm as well as location. Considerable detail on wage rates, hours worked, pay arrangements and perquisites furnished is included. Additional demographic characteristics of the farm labor force and a finer classification of farm workers by length of employment would have been of value. Unfortunately, the reference week is not appropriate for counting the seasonal component of the farm work force in the Northeast, which increases several-fold in the months following the enumeration period. However, counting all workers regardless of age reflected more accurately the actual size of the farm work force. Differences in definition of items and design of questions complicates the problem of comparability with data obtained in other censuses.

1954 Census of Agriculture. This Census was taken from October 18 to November 8, 1954 which represents a considerable change from 1950 (*14*). Farm labor information was for the week of September 26-October 2 in the New England and the Middle Atlantic states and for October 24-30 in Delaware, Maryland, and West Virginia. These reference weeks have special implications concerning size and composition of the farm work force and questions of comparability of data with those from other sources. In general, they are weeks of greater agricultural activity than the spring enumeration period in 1950.

The economic data gathered in 1954, including those on farm labor, are estimates based on a sample. Similarly, all data for State Economic Areas and sub-areas are sample-based estimates. Farms included in the sample were selected by the enumerators by assigning letter codes to the schedules and obtaining answers to all questions on designated schedules. Farms with 1,000 acres or more were included in the sample in all states, and those with 70,000 or more chickens sold in Delaware, Maryland, and West Virginia.

As in the 1950 Census of Agriculture, adjustment of the sample was necessary to make the farms selected conform more closely to the actual size distribution of all farms. The net result of this adjustment resulted in 3.2 percent of the farms being eliminated and 4.0 percent being duplicated for the United States. This produced a 22.5 percent sample. Expanded estimates were obtained by multiplying the sample data by five and adding the totals for large farms.

Structuring the sample as above resulted in data of a reliability such that the chances were two out of three of having estimates with an error of less than 5.3 percent for total and regular hired workers and for unpaid family workers, and 7.1 percent for seasonal workers with a base of 2,500 or more farms. Correspondingly greater deviations exist for estimates with a smaller base.

As in the 1950 Census, farms were defined as places of three or more acres with $150 or more agricultural production. Places of fewer than three acres were considered as farms if $150 or more of agricultural products were sold. Farm workers consisted of operators working one or more hours per week, unpaid family members working 15 hours or more per week and hired workers, or those who had performed any work for pay during the calendar week. Hired workers were subdivided into regular hired--those who worked or would work 150 days or more on this farm--and seasonal hired--those who worked or were expected to work fewer than 150 days. No age restrictions were established for any type of worker. Only those hired workers working "on this place" during the week were counted. Furthermore, only cash wages were reported.

Data from this census are neither as numerous nor as comprehensive as for 1950 either at the county, area, or state level. Of particular note is the absence of tables reporting perquisites. As in prior Agricultural Censuses, a count of number of workers and wage rates at a point in time were determined. Thus, the composition and demographic characteristics of the farm work force at other points in time are unavailable from this source.

1959 Census of Agriculture. In 1959, starting dates for the enumeration were between October 21 and November 11 for the Northeast states (*15*). Questionnaires were mailed to rural box-holders and collected during personal visits by enumerators. To enhance coverage, enumerators were provided lists of certain kinds of farms and those in certain areas.

As in prior years, labor data were obtained on a sample basis. The sample consisted of all large farms and 20 percent of all other farms. Large farms were those containing 1,000 acres or more or which had sales of $100,000 or more.

To increase reliability of the sample, the nation was divided into areas of such size that one enumerator could contact all farms in them in

three to four weeks. Enumerators were instructed to list and number all farms and to ask the sample questions of those whose numbers ended in "2" or "7" (information was gathered from all large farms) thereby making a sample of roughly 20 percent.

As in previous years, adjustment was made to improve reliability of estimates based on the sample and reduce possible bias from enumerators who deviated from prescribed procedures in selecting the sample farms. Totals were constructed by multiplying sample data by five and adding totals for large farms. Reliability checks indicated that when the estimated number of farms was 2,500 or more, the chances are two out of three that the number of regular hired workers would vary by less than 4 percent and hired labor expenditures by less than 9.6 percent from complete counts in the North.

Despite adoption of procedures to assure coverage of farms, estimates of under-enumeration of farms were as high as eight percent. However, a high proportion of undercounting was farms of less than 100 acres and noncommercial operations; work force information, therefore, would not be greatly affected.

A major change in the definition of a farm was made in 1959. Places containing ten acres or more which had sales of $50 or more were counted as farms; places of less than ten acres were included if sales were $250 or more. This increase in acreage in the definition of a farm reduced the number of farms nationally by approximately 232,000. Most places that did not qualify as farms in 1959 were operated either by retired people or by individuals working off their places. Nevertheless, considerable effort was expended in determining the effects of this definitional change on the agricultural information reported.

Farm labor information relate to operators, unpaid family workers and hired workers regardless of age. Hired labor is subclassified into regular workers, those employed 150 days or more on this farm, and seasonal workers, those employed less than 150 days. Operators were counted as in the work force if they spend one or more hours at farm work or chores during the week. Unpaid family workers are those working a minimum of 15 hours.

Data were obtained regarding wages, basis of payment and hours worked. Information was not obtained on perquisites. Labor information

pertained to the week preceding enumeration rather than two specific weeks as in 1954. This procedure was adopted to increase accuracy although the data are for different weeks on different farms.

Data are reported for states and counties but not for economic areas as previously. However, tabulations by 99 major economic subregions, constructed without regard for state boundaries, are available in unpublished form. Estimates for state parts of these subregions are also available.

The two major differences between the 1959 and prior Agricultural censuses was the change in definition of a farm and use of a variable reference week. Effect of the changed definition on the count of hired farm workers was probably slight. The use of the variable reference week increased the possibility of multiple counting of some workers. However, the enumeration period, chosen principally because it was conducive to the accurate determination of crop production yields, occurred sufficiently late in the fall that the agricultural work force in the Northeast was approaching its seasonal low point.

1964 Census of Agriculture. This Census was taken during the latter part of November and the first days of December in the 12 states included in this study (*16*).

A significant difference in farm labor data in this census was the lack of a count of workers on farms other than those in the farm operator's household. To compensate for this lack and to estimate hours of work, two special sample surveys were undertaken. They were initiated in March 1965 and covered a period of 52 weeks. One survey was designed to cover farms on which the farm operator and members of his family did a major part of the farm work. The second was designed to provide data for farms on which hired workers did a major part of the work. Information on the samples, questionnaires, collection and summarization techniques and resulting data are available (*17*). The surveys are not described here because of their nonreoccurring nature.

Although there were 51 versions of the regular schedule, questions relative to farm labor were identical for all states. Questionnaires were mailed to rural households about two weeks prior to enumeration. This procedure was adopted to lower costs and increase accuracy of the respondent's answers. Enumerators were responsible, however, for completing and checking the schedules.

Farm labor data are estimates based on a sample of farms. The sample consisted of all large farms (those having 1,000 acres or more or with sales of $100,000 or more) and 20 percent of all remaining farms. Sample farms were designated by census enumerators by determining which places qualified as farms and then assigning each a number in consecutive order. All questions were asked on farms having numbers ending in "2" or "7".

Estimates for items using sample-based information were derived by adding the totals for large farms to totals for all other farms which had been inflated using a ratio estimation procedure. The reliability of the estimated totals are indicated in the published reports. Chances are two out of three that hired labor items would vary by less than four percent on a national basis from complete counts when the base was 2,500 or more farms. Expenditures for hired labor would vary by a somewhat larger percentage with the same base, depending on type, size and economic class of farm.

The use of computer techniques had some influence on the definition of a farm in this Census. More criteria could be programmed into the editing and selection system than previously. Places of ten or more acres were counted as farms if a minimum amount of certain criteria was met, such as $50 of farm products sold. Places of fewer than ten acres were included if $250 of farm products were sold or if other criteria were met. As in all agricultural censuses since 1950, places which did not meet the production or sales requirements but normally would have qualified were included as a farm. In 1964, some 166,000 such places were counted as farms. Comparable counts for previous years are not available.

Due to the limited amount of farm labor data gathered in 1964, few additional items require definition. Regular hired labor were defined as persons "who worked or would work 150 days or more on this farm in 1964" even if they were not working at the time of enumeration. Members of the operator's family were included if they worked for pay. Expenditures for hired labor included cash payments and social security taxes.

For the members of the operator's household, data were obtained on age, sex, and relationship to head. For members ten years of age and over, additional information was obtained, including hours worked on this farm last week, days worked and wages on other jobs, and other income by source during 1964.

A farm operator was defined as an individual who operated a farm, either doing the work himself or directly supervising the work. Only one operator is counted per farm even in the case of partnerships; consequently, the number of farm operators is the same as the number of farms.

Data were published for counties, states, three regions and the United States. Some data are available for agricultural subregions in published form. These subregions, however, do not respect state boundaries.

The data had some serious shortcomings. Chief among these was the omission of seasonal hired workers unless they lived in the same house as the farm operator at time of enumeration. Even if they had been included, the data obtained in the Northeast would have been of limited usefulness because of the late fall enumeration period. The wording of the question on regular workers complicates the comparison of the regular worker data with those from previous Censuses. Previously, regular workers were those employed during the reference week and was or would be employed for 150 days or more while in 1964 all persons who worked or would work on this farm 150 days or more during any part of the calendar year were counted. This increased the count of regular workers obtained in 1964. However, it also itensified the problem of memory bias, since it required the respondent to recall information about workers who may not have been employed at the time of enumeration. It also raised the potential for double-counting workers. Another undesirable feature was the failure to enumerate the number of workers employed under various hiring arrangements and actual wage rates paid.

1969 Census of Agriculture. This Census was enumerated during the first part of 1970. Farmers received the questionnaires by mail in January and were asked to return them by February 15.

Questions on farm labor were changed considerably from those asked in 1964. Numbers of both regular hired workers (150 days or more on this place during 1969) and seasonal workers (fewer than 150 days) were obtained. In addition to the usual inquiry regarding expenditures for hired labor (cash plus Social Security taxes), a separate question on expenses for contract labor was asked. It was to include expenditures primarily for labor, such as harvesting of fruit, vegetables or berries performed on a contract basis by a contractor, crewleader, cooperative or similar entrepreneur. Questions regarding workers on farms, family or hired, at

time of enumeration were not included but such information was obtained by the 1970 Census of Population.

In addition to the regular 1969 Census of Agriculture that covered all farms, sample surveys of specialized types of farming are planned covering the 1970 operations. Information on labor to be obtained from the sample farms include the following: days worked on this place by the operator and each unpaid worker; numbers of regular hired workers, broken into those working 150 to 249 days and those working 250 days or more, and their total wages (cash plus Social Security taxes); total wages of part-time workers, broken into those working fewer than 25 days and those working 25 to 149 days, and of contract workers; and total man-days worked by hired workers during the year and during the highest calendar quarter.

SRS Monthly Mail Survey. The series reviewed here consists of monthly estimates of farm employment and hours worked, including members of the family and hired workers and quarterly estimates of wage rates (*18*). Although the series have been revised from time to time, procedures for gathering the information and definitions have remained largely unchanged.

In contrast to Census data, which are derived mostly from a systematic sample of farms, data reported by SRS are expanded estimates based on voluntarily submitted reports from 22 to 26 thousand farm operators who also report on many other aspects of farming.

The survey is conducted by mail by the Federal-State Crop Reporting Service offices located in states. Upon receiving the completed reports, state office personnel edit and summarize the reports and forward the results on special forms to the national office. This editing at the state level consists of examining schedules chiefly to confirm reasonableness of figures. Descriptions of procedures for editing and summarizing the sample data are available (*19*). Number of farms are the primary data used in expansion of sample information into aggregates. Other data are also used in preparing and adjusting the estimates prior to finalization.

Definitions of important items applying to farm employment are:

I. Survey week - The last full calendar week ending at least one day day before the end of the month.

II. Family workers:

A. Operators - Operators who work one or more hours during the survey week at the farm business.

B. Operator's family - Members of the operator's family who work 15 or more hours without pay during the survey week regardless of age.

III. Hired workers - Persons doing one or more hours of work for pay during the survey week including paid members of the operator's family.

Employment data are published monthly for each state, nine major geographic divisions and the Nation.[7/] From time to time, the estimates are revised because of new benchmark information, particularly the completion of an Agricultural Census. The revised estimates with explanation of the revision procedure are published (*20*) and (*21*). Monthly estimates are now available for the 48 states back to 1950 and for geographic divisions back to 1940. In addition, annual averages for geographic divisions are available back to 1910.

Cash wage rates per month, week, day or hour without or combined with common perquisites are estimated for states each quarter. Composite rates per hour are derived by computing a weighted average of all rates. The rates are based on farmers' reports of average wage rates paid in their localities. Piece rates are not reported because of the great diversity in kinds of rates involved. In computing the composite wage rate, an attempt is made to offset this shortcoming, at least in part, by applying the estimated weight for piece rate workers to the hourly rates without room and board on the assumption that of the rates available, this rate is most nearly comparable to returns from piece rate work. State estimates are also made of hours worked during the reporting week by five classifications of workers: farm operators, other family members, all family, hired workers and the average for all workers.

The major portion of each issue of Farm Labor is devoted to presenting numbers of workers, length of work week and wage rates for states, regions and the United States. However, comparative data for previous months and years are included.

The SRS series is the only source of state estimates by months of family and hired workers and length of work week, and quarterly data on

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[7/] Estimates for the 48 conterminous states only are included in the U. S. total. Estimates are not prepared for Hawaii and only quarterly for Alaska.

wage rates for hired workers. The regularity of publication and long-time uniformity in method of gathering data and procedure for deriving the estimates makes historical comparisons feasible.

These desirable features are offset somewhat by the type of universe sampled--establishments or farms. This means that a person who worked on more than one farm may be counted more than once. In addition, a worker could be employed more at nonagricultural than at agricultural work but still be counted as an agricultural worker.

A major weakness of the data is the unrepresentativeness of the sample. Because it is not on a probability basis but rather includes only crop reporters who are willing to supply information, substantial biases exist in the raw data. Adjustments are used in attempting to correct for them. Another source of possible bias in wage rate data is the type of inquiry; it requests reporters to supply "average wage rates being paid to hired farm labor in your locality" rather than on his farm. This raises the question of the respondent's knowledge of rates in his area. The lack of piece rates is also an undesirable characteristic of the estimates.

SRS Quarterly Survey. Following the stimulus provided by the report of the President's Committee to Appraise Employment and Unemployment Statistics (22), SRS was able to secure funds with which to strengthen its farm labor statistics program. As a result, a series of Quarterly Surveys--January, April, July and October--have been inaugurated, with the week of reference being that containing the 12th of the month. This is the same as the CPS reference week.

The sample frame for these surveys consists of: (a) an area segment sample by which every agricultural-land area in the U. S. can be sampled at a known probability, and (b) lists of large users of farm labors, which are also sampled at determined rates. The latter lists provide a more efficient means than the area sample for gathering data from large users of hired labor. Certain technical problems of overlap must be handled, but these are surmountable.

A developing problem in measurement of farm labor is being attacked in the Quarterly Survey. It relates to the increasing use by farmers of "agricultural service firms" on a contract or fee basis to perform farm operations that formerly were done chiefly by farm workers.

Various operations are done by these firms such as corn shelling; hay baling; threshing or combining small grain; harvesting, sorting, grading, packaging, packing and shipping many products but usually fruits and vegetables; spraying agricultural chemicals with airplane or ground machine; hatching poultry eggs; and boarding and breeding of livestock. Usually, pay for both equipment and labor is included in the fee. Workers employed by these firms are largely excluded in current estimates of both SRS farm employment and BLS nonagricultural employment based on reports from establishments. These firms are being brought into the sample for the SRS Quarterly Survey.

The survey uses several different questionnaires, each tailored to the particular list to which it is addressed. The questions are directed to collecting the following basic information:

I. Unpaid family workers, including operator: number and hours worked.

II. Hired workers, including paid family members: number and hours worked.

III. Agricultural Services: number, type of service, employment, and method and rate of pay.

IV. Wage rates for hired workers: amount and method of pay, such as per month or per hour, with or without perquisites.

V. Data for classifying farms by type and economic class.

As this statistical program is still in the development stage, a regular schedule for publication of the estimates has not been developed. To date, none of the estimates of farm employment have been released. However, wage rates for the first two quarters of 1970 in California and in the United States as a whole have been published (*18*, Apr. '70 and June '70). They consist of average hourly rates for: (1) all hired workers, (2) five groups of workers based on method of payment and perquisites, such as those receiving cash wages only, and those paid piece rates, and (3) six groups of workers based on type of work performed, such as machine operators, supervisors, and maintenance and bookkeeping workers.

The sample upon which these estimates were based was relatively small--about 2,800 employers in the nation and 365 in California. But, they are averages of rates paid on the respondent's farm and thus are

more precise than those based on the SRS monthly mail survey. In the latter, respondents report average rates paid in their locality.

The Statistical Reporting Service also conducts, as part of its general program of collecting data on crop and livestock, a June survey, addressed primarily to the area sample mentioned earlier. In this survey, SRS has collected certain information regarding farm labor for the Wage and Hour and Public Contracts Divisions, USDL (23), and also for ERS, USDA.

USTES Seasonal Workers. This series is maintained by the Farm Labor and Rural Manpower Service, USTES, Manpower Administration, USDL, and consists of estimates of numbers of seasonal farm workers by crop activity and origin of workers for qualifying agricultural reporting areas, states, and the U. S. The estimates are published at various times during the year although data for all months are included (24). Estimates of prevailing time and piece wage rates paid for selected crop and livestock activities in specified areas are included.

The published data are from monthly in-season reports submitted to the Manpower Administration by its affiliated State Agencies in states employing seasonal labor. The estimates relate to the 15th of the month. Reports are required for each month for each of 261 agricultural reporting areas in which 500 or more seasonal workers or any foreign workers were at work during the period. Only those parts of states normally using seasonal workers are included in agricultural reporting areas. Therefore, state estimates may not be for the entire state. A detailed explanation of the methods used in making the estimates is available (25).

Definitions useful in interpreting the data are:

I. Agricultural Workers - Persons engaged in the production of agricultural crops or livestock and in closely related on-farm activities which do not materially change the product from its original form. There are no age requirements.

II. Seasonal Hired Workers - Persons who are hired or assigned to work on any one farm or establishment for less than a continuous 150-day period in the course of a year. Family or unpaid workers are not included.

III. Migratory Workers - Persons who leave their home temporarily overnight to do farm work in another county within the same state or in a different state. Workers from Puerto Rico are included.

IV. Foreign Workers - Foreign nationals legally contracted for farm work in the United States.

These series are an important source of data on seasonal farm labor. They are the only data on origin and activity of workers by state or month. Data on prevailing wage rates and piece rates are also useful, although they cannot be translated into earnings.

The usefulness of the data and its comparability from month to month and year to year are limited by the coverage criteria. There are 44 agricultural reporting areas in the Northeast region, including 172 counties, Table 1. These areas include a substantial proportion of the value of agricultural sales, although coverage varies by commodity, Table 2. In five states, all counties and sales are covered. Coverage in other states varies down to 48 percent of the value of farm products in Connecticut and 23 percent in West Virginia. Labor Market Reporting Areas include substantially higher proportions of the value of crop sales than of all products.

A greater problem than coverage by counties is worker criterion. Data are reported only for months and areas with 500 or more seasonal workers or any foreign workers. Areas not required to report may in the aggregate, be employing a sizeable number of seasonal workers.

Methods of obtaining data reported on the in-season reports and the manner in which workers are allocated among crop activities and places or origin lacks precision. In most Northeast states, local Employment Service personnel designated as farm labor representatives file the reports with their central offices where data from several offices are aggregated into area totals. However, procedures used by local personnel in obtaining data vary widely within and among states. Most local representatives rely on an informal canvas of major employers or derive estimates from crop production statistics. Activities used in reporting are not standardized and the definition of "local" varies from state to state. Data on prevailing wage rates are collected from an organized sample by field enumeration.

Table 1. Agricultural Reporting Areas, Northeast States, December 1968.

	Agricultural Reporting Areas	Counties	
		Included	Excluded
	Number	Number	Number
Maine	5	16	0
Connecticut	1	3	5
Vermont	1	14	0
Massachusetts	5	10	4
New Hampshire	1	10	0
Rhode Island	1	5	0
New York	9	35	27
New Jersey	8	17	4
Pennsylvania	7	37	30
Maryland	3	18	5
Delaware	1	3	0
West Virginia	2	4	51
Northeast	44	172	126

Source: Farm Labor and Rural Manpower Service, USTES, Manpower Administration, USDL.

Table 2. Value of Agricultural Sales: Total and in Agricultural Reporting Areas, Northeast, 1964.

Commodity	Value of Sales		Percentage in ARA
	Total	In ARA	
	Million	Million	Percent
All Farm Products	$2,950	$2,364	80
All Crops	953	845	89
Field Crops	468	419	89
Vegetables	122	115	94
Fruits and Nuts	146	139	95
Forestry and Nursery Products	216	172	80
All Livestock and Livestock Products	1,998	1,519	76
Poultry	585	478	82
Dairy	1,135	831	73
Other Livestock and Livestock Products	278	209	75

Note: Detail may not add to totals because of rounding.

Source: (16).

SECTION III. FARM LABOR PRODUCTIVITY

A broad spectrum of labor productivity measures have a long history in farm labor and farm management research and education. In this context, labor productivity refers to production or performance per unit of labor or the reciprocal, units of labor per unit of production. The measures of labor productivity described here are ratios of farm production to labor input of all persons working on farms in a region or the nation. The indexes of production per man-hour do not reflect the unique contribution of labor. Rather, they measure the joint effect of all factors that affect either farm production or labor input. These include such influences as skills of workers, advances in technology and mechanization, and yields of crops and livestock. Both ERS, USDA and BLS, USDL publish indexes of farm production per man-hour. However, they differ in several respects. To understand them, it is necessary to understand the underlying measures of production and labor input used in their construction.

ERS Farm Production per Man-Hour

The ERS indexes of farm production per man-hour are available for the United States since 1910 and for 10 farm production regions for years since 1939.[8/] The indexes are released annually for nine groups of crops and all crops, for three kinds of livestock and all livestock and livestock products, and for total farm output (26).[9/]

The ERS production indexes are calculated by the familiar constant price-weight method, which requires two distinct steps. Quantities of each commodity produced each year are multiplied by weighted average prices received by farmers during the weight base period. The quantity-price aggregates thus derived are expressed as percentages of the average quantity-price aggregates in the reference base period. The basic produc-

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8/ The Northeast farm production region includes 11 of the 12 states covered in this study; West Virginia is excluded.

9/ The 1964 issue contained the indexes for all years; more recent issues include five-year averages for early periods. The detailed regional indexes are released in annual supplements: I-Farm production, II-Cropland used for crops, III-Man-hours of farm work, and IV-Production per man-hour.

tion and price data are from SRS. Indexes for the United States since 1939 are based on the sum of the regional quantity-price aggregates. The same applies to the years 1919 to 1939 except that a different grouping of states was used. Indexes for 1910-18 were developed only for the United States as a whole.

The weight base period is 1957-59 for the years since 1955, and 1947-49 for the years 1939 to 1955. In indexes for years preceding 1940, average 1935-39 prices were used.

The reference base period currently used for the indexes is 1957-59. As more than one set of price-weights was used in computing the indexes, splicing was necessary to convert the indexes based on the various sets of price-weights to one final series of index numbers. Splicing is done by overlapping computations for a year and computing a percentage change between the respective indexes for that year. The indexes were spliced at 1955, and the United States series were also spliced at 1940.

In the total measure of farm output, only net livestock production or product added by livestock is included. This is done to avoid double counting of farm-produced feed as part of both crop and livestock production. Other products having the nature of producer goods are likewise excluded. Examples are eggs used for hatching and certain seeds. Production of horses and mules and feed for them are also excluded from farm output. Thus, farm output measures the annual volume of farm production available for eventual human use through sales from farms or consumption in farm households.[10/]

The ERS series of man-hours of farm work measure the labor input in farming. They are built up from data on individual farm enterprises. Regional average man-hours per acre of crops and per head or per unit of production of livestock are applied to the official estimates of acres and numbers reported by SRS. Time for farm maintenance or general overhead work is calculated separately and added to the direct labor for crops and livestock in arriving at total man-hours of all farm work.

10/ A more detailed discussion of methods used in constructing the indexes of farm production, farm inputs, and productivity is available (27).

Estimates of man-hours per acre or per head for current years are made by modified extrapolations from benchmarks. For crops, the extrapolations are modified by such items as yield per acre, utilization of the crop and method of harvest. For livestock, the modifiers include such factors as size of enterprise, production per animal and extent of different methods and practices followed, such as use of self-feeders and milking parlors.

Benchmark estimates of man-hours per acre and per head in each state are developed every fifth year. They are developed by states to enhance accuracy. They are then weighted into regional averages, which are inserted into the series with a modified interpolation from the previous benchmark. Many agencies, but chiefly State Agricultural Experiment Stations and the U. S. Department of Agriculture, have collected and published considerable data on labor requirements (28). These are used in developing the state averages. Several sets of related data also are used, including those previously used to modify the extrapolations. Some of the benchmark estimates are released in separate publications (29), (30), (31) and (32).

The total man-hours of farm labor input thus developed are converted to index numbers which are divided into appropriate indexes of production to arrive at indexes of production per man-hour.

As the ERS indexes of farm labor productivity compare total production with labor input only, they are partial measures of efficiency and less desirable than one that compares production with the combined use of all resources. However, as labor is one of the more important inputs, the indexes are fair approximations to more comprehensive indexes of efficiency.

As the ERS indexes are developed for regions and for groups of products, they have real advantages over more aggregative measures. The subindexes permit a more thorough analysis of factors responsible for current and historical changes in farm production per man-hour.

The labor requirement measure of labor input is in standard units of labor time and includes little, if any, standby or nonproductive time which may vary over time or among products and regions. Hence, the measure of labor input used by ERS has desirable characteristics for indicating labor productivity.

BLS Farm Production per Man-Hour

The Bureau of Labor Statistics publishes two indexes of farm production per man-hour. The same production data and index are used for both series but the denominator of one ratio is based on man-hours worked and the other on man-hours paid. They are available for the United States only and are currently published for the years 1947 to date. However, the indexes have been linked to comparable series back to 1909. In addition to agriculture, series are developed for the total private economy and for other sectors (*33*).

The production index for the private economy measure is developed by the Office of Business Economics, U. S. Department of Commerce, and is based on gross national product (GNP). This represents the total national output of goods and services at current market prices. To develop the production index, GNP is "deflated" to real product, that is expressed in dollars of constant purchasing power. The general procedure is to divide components of the current dollar GNP by appropriate price indexes, utilizing as fine a product breakdown as possible, and then to sum the components to obtain the constant dollar GNP.

Agriculture's real product is derived by deflating components of farm income and expenses for material and service inputs. The difference between sums of the two is real product originating in agriculture. The basic receipt and expenditure data are from the farm income estimates of USDA (*34*)[11/] but are adjusted for consistency with GNP concepts.[12/]

The total value of output includes: (1) cash receipts from farm marketings and government payments; (2) farm home consumption; (3) net changes in inventory; and (4) gross rental value of farm homes. The intermediate inputs cover such items as feed, fertilizer, seed, gasoline, insurance and veterinary services. Payments for farm labor are not

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11/ A detailed discussion of sources of data and methods used in developing the estimates of farm income and production expenditures is available (*35*).

12/ For discussion of deflation methodology see (*36*, Sept. '51 and Oct. '58). For historical data see (*37*) and current estimates (*36*).

deducted as intermediate inputs as labor payments are part of value added of the farm sector. Gross rents paid to non-farm landlords are deducted as they represent part of value added of non-farm sectors of the economy.

The detailed categories within total output and input are deflated by comparable price indexes, for the most part from USDA. The price indexes currently used are in 1958 prices. The constant dollar net farm output estimates thus developed are then converted to indexes with 1957-59 as the reference base period.

The BLS labor force estimates are described elsewhere in this report. Data from this body of statistics are utilized in developing estimates of farm labor input, as follows: (1) the annual average number of persons "at work" on farms is multiplied by weekly hours per worker, converted to an annual basis, to arrive at aggregate hours worked; and (2) the same hours per worker are applied to the annual average number of persons "employed" on farms in computing aggregate hours paid. The latter computation assumes that workers temporarily absent from their job because of illness, vacation, bad weather, etc. were paid for the same number of hours as those at work. The total hours thus developed are converted to indexes with 1957-59 as the reference base period. These data are then divided into the indexes of farm output to derive indexes of output per man-hour.

These indexes of labor productivity, like those of ERS, are only partial measures of efficiency and less desirable than one in which all resources are included in the denominator of the productivity ratio. The BLS farm output index has advantages for labor productivity measurement because it is a net measure. This means that materials, fuel, services and other intermediate products from other sectors of the economy are subtracted from gross farm output. Net output thus recognizes the contribution of non-farm sectors to agricultural production and is more the result of the application of farm labor and farm capital.

The BLS hours of work include all workers 14 years of age and older and is assumed to be homogeneous. No allowance is made for changes in composition of the employed labor force nor for changes in the quality of labor.

The BLS indexes permit interindustry comparisons of labor productivity as comparable measures are available for the total economy and for certain non-farm sectors. However, the comparisons must be national in scope and between broadly defined industries.

SECTION IV. COMPARISON OF MAJOR AGRICULTURAL LABOR STATISTICS

In the preceding section, the major statistics on farm labor are discussed. Definitions, sample designs, enumeration and expansion procedures, coverage and other features of each set of statistics are listed. In this section, the actual estimates of selected components of farm employment and other data from the major sources are compared and reasons for differences examined. However, insufficient information is available to reconcile the various series completely. One cannot always be certain of the magnitude of the effect of a variation in concept or procedure, or in some instances, of even the direction of the expected effect.

Farm Employment

SRS Monthly Mail Survey and BLS Labor Force Estimates. Annual averages of total farm employment and its components based on monthly estimates are available only from SRS and BLS. The SRS annual total is consistently higher than from BLS, Table 3. The former imposes no age requirement to be counted as employed on farms, but the latter has always excluded persons under 14 years of age from estimates of the labor force and in addition, since 1967, has excluded 14- and 15-year-olds. This variation in the definition of employed persons is one obvious reason for differences between estimates of the two agencies. However, it and other reasons have had varying effects on the estimates during the last two decades.

During the early 1950's, BLS annual estimates of total farm employment, based on the 16 and over age criteria, were from 70 to 72 percent of SRS. Naturally, the difference was less with the BLS younger age limit; based on it, percentages of SRS were from 74 to 76 percent. Recently, however, the percentages of SRS were from 78 to 80 percent if the younger workers are excluded from the BLS figures, and from 83 to 85 percent if they are included. These rising percentages mean that the

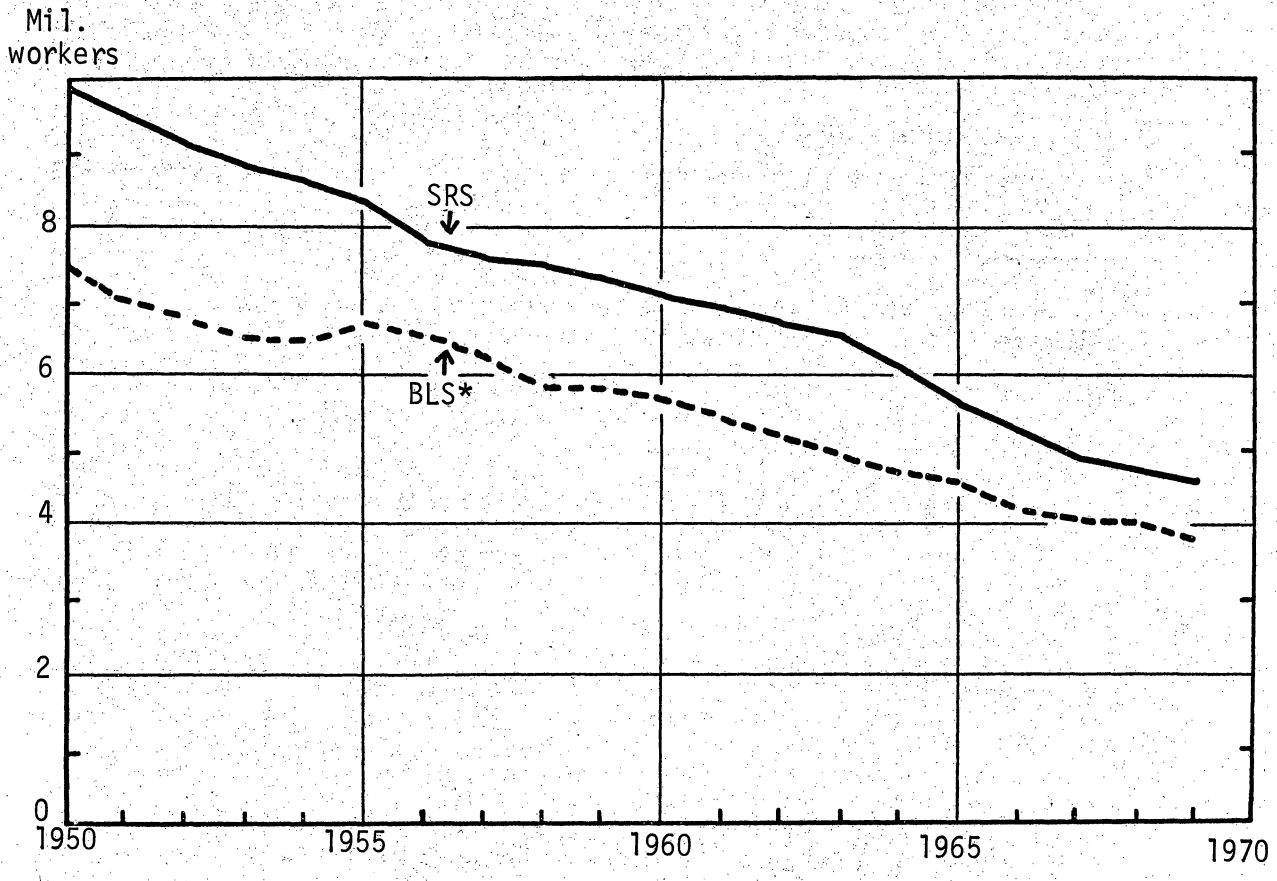
Table 3. Total farm employment: Annual average number of workers, SRS and BLS estimates, United States, 1950-69.

Year	SRS Number of Workers	BLS			
		Aged 16 and over		Aged 14 and over	
		Number of Workers	Percentage of SRS	Number of Workers	Percentage of SRS
	1,000	1,000	Percent	1,000	Percent
1950	9,926	7,160	72	7,497	76
1951	9,546	6,726	70	7,048	74
1952	9,149	6,501	71	6,792	74
1953	8,864	6,261	71	6,555	74
1954	8,651	6,206	72	6,495	75
1955	8,381	6,449	77	6,718	80
1956	7,852	6,283	80	6,572	84
1957	7,600	5,947	78	6,222	82
1958	7,503	5,586	74	5,844	78
1959	7,342	5,565	76	5,836	79
1960	7,057	5,458	79	5,723	81
1961	6,920	5,200	75	5,463	79
1962	6,700	4,944	74	5,190	77
1963	6,520	4,687	72	4,946	76
1964	6,111	4,523	74	4,761	78
1965	5,610	4,361	78	4,585	82
1966	5,214	3,979	76	4,206	81
1967	4,903	3,844	78	4,075	83
1968	4,749	3,817	80	4,038	85
1969	4,590	3,606	78	3,813	83

Source: (*6*) and (*18*).

ANNUAL FARM EMPLOYMENT - TOTAL WORKERS

United States



Source of data: (*6*) and (*18*). *14 years of age and older

FIGURE 1

SRS estimate of total farm employment has dropped more than either BLS series, resulting in a narrowing of the difference between them, Figure 1.[13/]

13/ The BLS estimates based on 14 years and older are charted for comparability with historical estimates of numbers of family workers (self-employed and unpaid family) and hired workers (wage and salary). In 1967, when BLS converted to the 16 and over age concept, historical estimates of classes of workers were not revised because: "Most of the detailed series showed very small differences which were within sampling error. Even where significant differences did occur, however, it was not considered feasible to revise two decades of historical statistics..." (*6*, Feb. '67).

The same general pattern has existed for estimates of both family workers and hired workers. During the early 1950's, the SRS estimates were higher than those developed by BLS but have decreased more since then. In fact, the drop in SRS numbers of hired workers was sufficiently greater that the BLS estimates now average higher, Figure 2.[14/]

Conceptual and other variations largely account for the generally higher SRS estimates but the narrowing of the difference, particularly in

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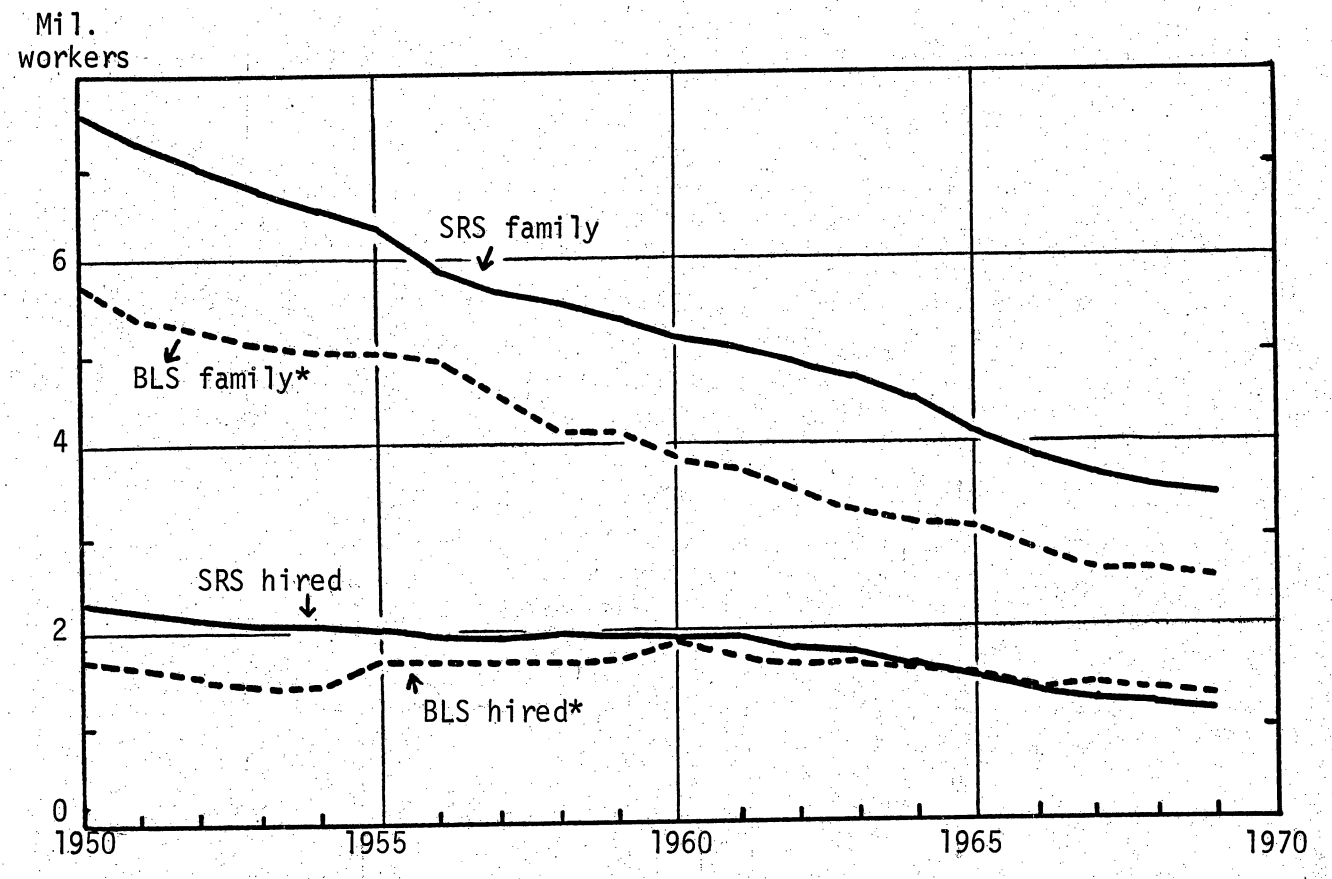
14/ BLS estimates are those based on the 14 years and over age limit as are all statistics presented hereafter unless otherwise indicated.

ANNUAL FARM EMPLOYMENT - FAMILY AND HIRED WORKERS

United States



Source of data: (6) and (18). *14 years of age and older

FIGURE 2

hired workers and the current greater BLS estimates of them as compared with SRS raises certain questions. In addition to the age factor, the variation in method of counting farm-non-farm multiple jobholders explains part of the difference between the estimates. The SRS series of farm employment includes all persons who did farm work irrespective of their other activities. The BLS series, on the other hand, classifies persons according to their major activity. Thus, a worker engaged in both farm and non-farm work during the week is classified as a non-farm worker if more time was spent at the non-farm job. This was the situation for 666,000 workers during the BLS survey week in May 1969, Table 4. This kind of multiple jobholding explained 61 percent of the difference between

Table 4. Comparisons of multiple jobholders with a primary nonagricultural job and a secondary agricultural job with the differences between SRS and BLS estimates of farm employment, United States, May of indicated years 1962-69.

Year	Farm employment			Workers with a primary non-farm job and a secondary farm job	
	SRS	BLS	Difference	Number	Percentage of difference
	1,000	1,000	1,000	1,000	Percent
1962	7,332	5,428	1,904	504	26
1963	7,036	5,178	1,858	685	37
1964	6,704	5,007	1,697	664	39
1965	6,124	5,128	996	649	65
1966	5,586	4,292	1,294	601	46
1969[1/]	4,989	3,894	1,095	666	61

[1/] BLS estimates not strictly comparable with previous years because 14- and 15-year-old workers are excluded. However, it is believed that few workers of these ages hold more than one job.

Source: (*10*, May '63, Mch. '64, Mch. '65, Febr. '66, Oct. '67, and Aug. '70) and (*18*).

BLS and SRS estimates of total farm employment for that month. However, results of surveys of multiple jobholding conducted in other recent years indicate that variation in method of classifying non-farm workers who moonlight on a farm job was not a factor in the narrowing of the difference between estimates of total farm employment from the two agencies (*10*, May '63, Mch. '64, Mch. '65, Febr. '66, Oct. '67 and Aug. '70).[15/]

Another reason for the higher SRS estimates is the multiple counting of persons who work on more than one farm during the survey week. This occurs, of course, because SRS estimates are based on a sample of farms or establishments. The BLS surveys of multiple jobholding includes information on the extent of this kind of moonlighting, also. Multiple jobholders with both primary and secondary jobs in agriculture are less prevalent than the farm-non-farm job combination and thus, account for a lower proportion of the difference between SRS and BLS estimates. However, the number of workers with more than one farm job during the week decreased from May 1962 to May 1969, and contributed to the narrowing of the difference between estimates from the two series.

Other characteristics of the farm employment series should tend to produce higher BLS estimates relative to SRS. The latter excludes persons who did no work but BLS includes those with a job but were not at work during the reporting week. Farm jobholders in the no-work group averaged 130,000 during 1969 or 3.6 percent of those classified as employed on farms by BLS. Since 1960, numbers of farm workers who were ill, on vacation or for other reasons were temporarily absent from their job have decreased in proportion to those employed. They have not, therefore, contributed perceptibly to the narrowing of the difference between SRS and BLS estimates.

Since 1960, BLS estimates include farm workers in Hawaii and Alaska but SRS estimates continue to be for the 48 conterminous states only.

There is now apparently little variation between SRS and BLS in the kinds of jobs or occupations that may be considered as work on farms.

15/ This conclusion assumes that May is a representative month for multiple jobholding and for indicating differences between annual averages of estimates of total farm employment.

Earlier, a variation was recognized. A 1957 publication of the USDA stated that "persons with non-farm occupations who are working on farms, such as bookkeepers and typists, are considered as employed in agriculture by the Bureau of the Census (estimates now published by BLS) but are not included in AMS (now SRS) estimates of agricultural employment" (*38*). The Gordon Committee, reporting in 1962, mentioned this conceptual variation in explaining statistical differences between the estimates (*22*). An updated version (*11*) of the USDA 1957 publication indicates that SRS used the Census of Agriculture's definition of farm work which in both 1959 and 1964 included as a farm activity "keeping farm or ranch records" (*15*) and (*17*). According to BLS, numbers of farm workers doing non-farm-type jobs rose as a proportion of total farm employment from 2.6 percent in 1957 to 9 percent in 1968 and 1969. To the extent that they are not currently included by SRS, they account for part of the narrowing of the difference between SRS and BLS estimates.

As the conceptual and other variations between the two series exert a differing magnitude of influence seasonally, their effects on the estimates of total farm employment are more striking in the monthly data, Table 5 and Figure 3. Differences are significantly greater during the summer and early fall peak of farm work when many youth and moonlighters are employed on farms and included in the SRS series but excluded by BLS.

This means that the SRS series continues to show a greater seasonal swing despite a marked reduction in seasonal variation during the last two decades. In 1950, seasonality of employment, measured by peak month over January, was 82 percent but by 1969 was down to 64 percent. The BLS series now peaks at about 50 percent over January and was not greatly different in 1950.

It was indicated previously that BLS annual estimates of hired farm workers for recent years are higher than those of SRS and that this situation was difficult to understand, given the respective definitions and concepts. In 1950, the SRS estimate was about 600,000 higher but in 1969 the BLS estimate was more than 100,000 higher. The monthly estimates for those two years are shown in Figure 4. It may be noted that in 1950 BLS estimates were higher in January, November and December but in 1969 were higher in each of the first six months plus November and December.

Table 5. Total farm employment: Monthly number of workers, SRS and BLS estimates, United States, indicated years 1950-69.

Month	SRS			BLS[1/]		
	1950	1960	1969	1950	1960	1969
	1,000	1,000	1,000	1,000	1,000	1,000
January	7,144	5,064	3,404	6,198	4,610	3,264
February	7,716	5,318	3,605	6,223	4,620	3,377
March	8,637	5,942	3,984	6,675	4,656	3,455
April	9,821	6,970	4,552	7,195	5,393	3,779
May	10,847	7,568	4,999	8,062	5,837	4,086
June	11,260	8,233	5,239	9,046	6,856	4,837
July	11,311	8,391	5,581	8,441	6,884	4,599
August	11,573	8,300	5,427	8,160	6,955	4,355
September	13,006	8,909	5,394	7,511	6,588	3,801
October	11,678	8,272	5,147	8,491	6,248	3,683
November	8,977	6,542	4,255	7,551	5,666	3,445
December	7,138	5,188	3,488	6,234	4,951	3,073
Peak month--percent of January	182	176	164	146	151	148

[1/] 14 years of age and older.

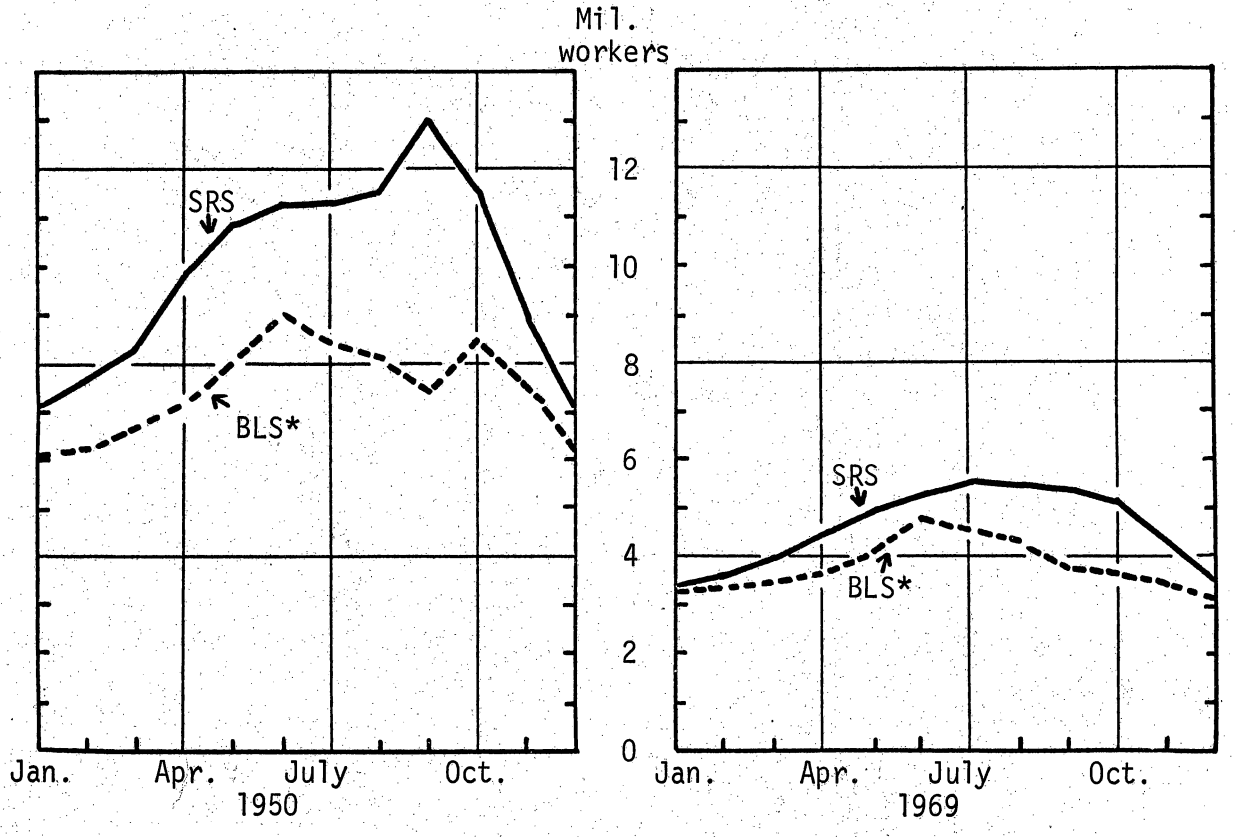
Source: (6) and (18).

The higher estimates of BLS do not seem to be in line with variations in the main concepts and definitions. About all that can be said with certainty concerning the consistency of the two series of estimates of hired farm employment is that both exhibit a secular decline and that the SRS series continues to show a greater seasonal variation than the BLS series.

Census of Population and BLS Labor Force Estimates. The estimates of farm employment made by BLS and the Census of Population are both based on a sample of households, on nearly the same concepts and have other similarities yet differences exist in the actual numbers reported:

SEASONAL FARM EMPLOYMENT - TOTAL WORKERS

United States



Source of data: (*6*) and (*18*). *14 years of age and older

FIGURE 3

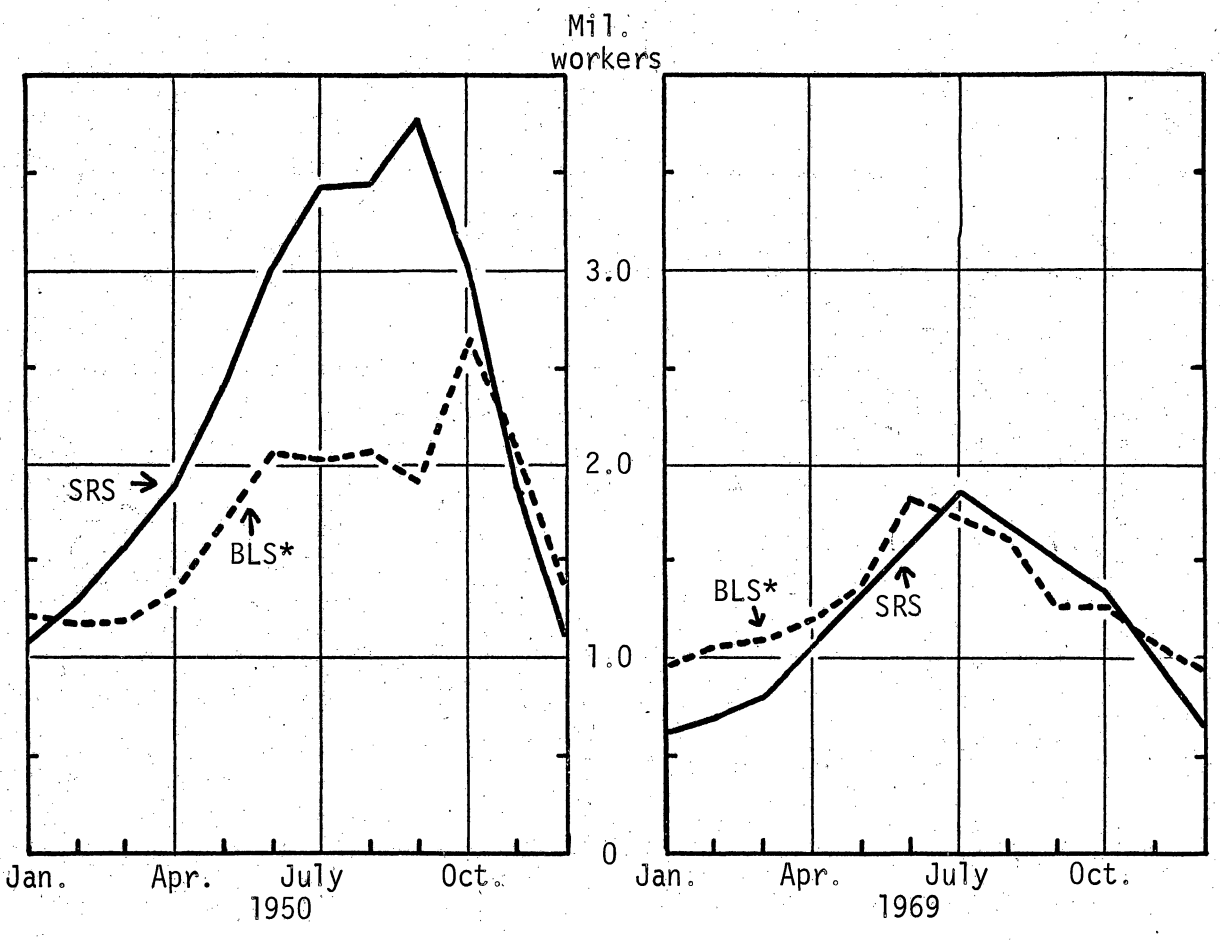
Farm workers, 14 years old and over

Year	Census	BLS, April	BLS as a percentage of census
	1,000	1,000	Percent
1950	6,723	7,195	107
1960	4,079	5,393	132

Reasons for these differences and those in other components of the labor force and population have been the subject of considerable research (22, Appendixes J and K). Briefly, it indicates that: (1) unpaid family

SEASONAL FARM EMPLOYMENT - HIRED WORKERS

United States



Source of data: (6) and (18). *14 years of age and older

FIGURE 4

workers were the largest contributors to the difference in total farm employment in both 1950 and 1960, (2) difference in farm employment was greater in both years than for most other components of the labor force, (3) contrary to farm employment, the difference decreased from 1950 to 1960 for most components, particularly for the unemployed, and (4) the differences were due to many factors, including inconsistent reporting to the two enumerations by individuals regarding their labor force status.

SRS Monthly Mail Survey and Census of Agriculture. Data on farm employment from the 1959 and previous Censuses of Agriculture were used as benchmarks for the SRS series. The procedure included a reconciliation of the actual estimates and accounted for the differences (*20*) and (*21*). Chiefly because of under-enumeration of farms, the Census count of farm workers is lower than SRS. However, the extent of incompleteness is determined and appropriate adjustments are made. As indicated previously, the 1964 Census of Agriculture did not produce data on total farm employment nor of any of the components of the farm work force except operators and regular hired workers.

SRS Monthly Mail Survey and USTES Seasonal Workers. As the estimates made by USTES are for seasonal hired workers only and do not cover all areas of the country, they are obviously lower than estimates of all hired workers in the nation made by SRS, Table 6. Also as might be expected, they show a greater relative seasonal variation as few seasonal hired workers are employed during the slack winter season. This applies particularly to the Northeast region where winter employment of seasonal workers is negligible, Table 7.

During the active season in 1969 in the Northeast, SRS estimates exceeded those of USTES by 70 to 88 thousand workers while during the less active months the difference was about 50 thousand workers. These types of differences are not unexpected since the active farm work season in the Northeast is long enough that some seasonal workers are employed more than 150 days and are therefore not counted by USTES and yet, are not year-round workers and at work during the December through February slack period.

In 1969, the difference between the two series for the United States was 374,000 workers during the December-January slack months, and increased to 876,000 in July. It is unlikely that all these are regular

Table 6. Hired farm employment: Monthly numbers of workers, SRS and USTES estimates, United States, indicated years 1959-69.

Month	SRS-- Total Hired Workers			USTES-- Seasonal Hired Workers		
	1959	1964	1969	1959	1964	1969
	1,000	1,000	1,000	1,000	1,000	1,000
January	971	809	629	---	279	255
February	1,086	887	696	---	275	270
March	1,363	1,077	807	---	294	287
April	1,651	1,419	1,053	---	380	362
May	2,078	1,793	1,312	---	748	621
June	2,930	2,412	1,579	1,222	1,069	970
July	2,731	2,542	1,856	1,238	1,293	980
August	2,780	2,268	1,689	1,207	1,119	988
September	2,840	2,136	1,500	1,398	1,061	780
October	2,470	1,987	1,330	1,384	1,025	666
November	1,732	1,175	968	823	571	373
December	984	784	659	399	352	285
Peak month-- percent of January	302	314	295	---	463	387

Source: (*18*) and (*24*).

workers. They probably represent seasonal workers in areas for which USTES reports are not required or may be due to sample or procedure inadequacies or differences in reference date during periods of rapid change in farm employment.

The two series are not consistent with respect to seasonal changes in farm employment over time. In the Northeast, both series peak in August, but the SRS series shows a steady decline from the peak while the USTES series shows seasonal employment remaining at a high level through October. SRS estimates indicate that October employment in the region declined more than 50 percent from 1959 to 1969, while the USTES series show little change for the same period. It is unlikely that there was

Table 7. Hired farm employment: Monthly numbers of workers, SRS and USTES estimates, Northeast, indicated years 1959-69.

Month	SRS-- Total Hired Workers			USTES-- Seasonal Hired Workers		
	1959	1964	1969	1959	1964	1969
	1,000	1,000	1,000	1,000	1,000	1,000
January	114	82	56	--	5	2
February	130	85	57	--	5	1
March	151	103	64	--	5	1
April	177	134	79	--	5	6
May	221	174	105	--	48	33
June	272	227	135	75	70	47
July	292	236	156	126	119	79
August	317	220	166	151	124	93
September	293	220	148	125	115	78
October	214	140	96	92	91	85
November	159	99	66	19	20	18
December	122	85	58	6	7	4
Peak month-- percent of January	278	288	296	--	2,480	4,650

Source: (*18*) and (*24*).

such a precipitous decline in employment of regular workers during this period without some corresponding decline in seasonal employment. It is also unlikely that this decline occurred in parts of the region outside of USTES agricultural reporting areas. Two plausible explanations for these statistical results are: (1) a great deal of double counting of workers in the USTES series, or (2) inadequate representation of large fruit and vegetable farms in the SRS sample. Seasonal workers on Maine potato farms account for a substantial portion of seasonal employment in the Northeast. Differences between the two series in estimates of employment for Maine are large. As potato employment is highly seasonal, a small variation in the time of counting can have a significant effect on

the estimates. Although less pronounced, the two series show substantial differences in the rate of decline during the last decade in June, July and August employment for the United States as a whole. In these types of situations, different conclusions about changes in seasonal farm employment would be drawn from the two series. This emphasizes the fact that users of farm employment statistics must be selective in their choice of data and cautious as to the meaning attributed to differences among statistics from various sources and from the same source over time. It also emphasizes the need for greater uniformity in concepts and procedures and more detail in the collection and dissemination of farm labor statistics.

ERS and BLS Labor Productivity

Conceptual differences between the ERS and BLS measures of farm labor productivity result in somewhat different trends in the series. From 1950 to 1969, the BLS indexes rose 185 percent while the ERS index increased 210 percent, Table 8. This differential relative change resulted from a greater increase in farm output as measured by ERS.

Material and service inputs used in farm production have increased materially during the last several years. The netting out of these inputs in the BLS production index has limited its upward climb. For example, use of fertilizer on farms has risen significantly and has contributed to greater production. The added product is included in the ERS production index, but in essence, is not in the BLS index. The inclusion in the ERS index of additional production resulting from application of greater quantities of material and service inputs means that it is a more gross measure. The BLS index, on the other hand, is a more net measure because inputs of intermediate products are subtracted from production in arriving at farm output. There are other differences between the production indexes but they are minor.

Although there are great conceptual differences between the ERS and BLS measures of farm labor input, they exhibit about the same trend. Therefore, the differences are an unimportant factor in the variation in trends between the ERS and BLS indexes of farm output per man-hour. However, differences in concept are reflected in the level of estimates of farm labor input. For 1969, the ERS estimate was 6.8 billion man-hours

Table 8. Index numbers of farm output, labor input and output per man-hour, ERS and BLS estimates, United States, 1950-69.

(1957-59=100)

Year	Farm Output		Man-Hours of Labor		Output per Man-Hour	
	ERS	BLS	ERS	BLS[1/]	ERS	BLS
1950	86	93.7	142	146.2	61	64.1
1951	89	88.9	143	138.3	62	64.3
1952	92	91.8	136	131.3	68	69.9
1953	93	96.6	131	122.1	71	79.1
1954	93	98.6	125	118.3	74	83.3
1955	96	101.0	120	120.3	80	84.0
1956	97	100.5	113	114.9	86	87.5
1957	95	98.1	104	105.2	91	93.3
1958	102	100.5	99	97.5	103	103.1
1959	103	101.9	97	97.3	106	104.7
1960	106	105.8	92	95.6	115	110.7
1961	107	107.2	88	89.4	122	119.9
1962	108	106.8	84	87.3	129	122.3
1963	112	110.1	81	82.5	138	133.5
1964	111	107.7	77	79.3	144	135.8
1965	114	114.5	73	77.2	156	148.3
1966	113	108.2	69	70.2	164	153.7
1967	118	114.5	68	67.8	174	168.2
1968	120	112.6	66	66.3	182	169.1
1969	121	113.5	64	62.0	189	182.5

[1/] Hours worked, based on labor force data.

Source: (*26*) and (*33*, plus recent releases).

and the BLS estimate of hours worked on farms was about 8 billion. As the ERS estimate is based on the labor requirement concept, it includes little, if any, nonproductive or standby time while some of this kind of time is inherent in the BLS measure of hours worked and more in the hours paid measure. In addition, the BLS treatment of multiple jobholders in counting farm and non-farm workers and their weekly hours understates farm man-hours and, therefore, overstates farm output per man-hour. There is evidence that this phenomenon is increasing.

The ERS technique of interpolating and extrapolating man-hours per acre or other production unit result in normalizing the estimates. To illustrate, time to perform more than the usual number of cultivations of a crop, due to more frequent rains, may not be fully reflected in the estimates.

There is also an element of adult male equivalency or standard labor requirements in farm labor input as estimated by ERS. Respondents often report in these terms rather than actual achievement of all workers involved.

SECTION V. IMPROVEMENT OF AGRICULTURAL WORK FORCE STATISTICS

Historical Review

Employment statistics have been part of Census enumerations since the latter part of the 19th century. Since that time the increased complexity of the economy created by the transition from an agricultural to an industrial nation has focused attention upon the individual's increasing dependence upon continued gainful employment. The essentials of life which must be purchased directly rather than being home-produced, as was formerly the case, make regular money income vital. The dire and unfortunate conditions which result when this complex earning process is interrupted remains vivid in the minds of all who experienced the Great Depression. This period also underscored the need for more sensitive statistical measures for gauging the detailed composition and trends of the various components of the labor force.

With the harsh and unfortunate realities of the Depression but some ten years removed, there was substantial effort expended at the national level in the middle forties to prevent the possible recurrence of these conditions as a result of an anticipated decline in economic activity following World War II. The Employment Act of 1946 was the culmination of these efforts. In essence, this legislation mandated the Government to maintain economic conditions conducive to a high rate of employment, production and purchasing power within a framework of free enterprise. Implementation of this mandate created a need for more precise statistics to monitor employment conditions than had previously been available. In addition, increased involvement of Federal, State and local government in various employment stimulating programs established an administrative need for data for states and local areas.

Agricultural work force information, as an important component of general labor data, has benefited from the attention and concern given to the state of our employment statistics. Various agencies of government have on several occasions in the past conducted inquiries for the purpose of improving the quality of agricultural work force data. The conclusions of these investigations will be reviewed briefly.

In November of 1955 hearings before the Subcommittee on Economic Statistics included a report commonly referred to as the Palmer Committee Report (39). It discussed shortcomings of various labor force series,

including USDA's farm employment estimates, then compiled by the Agricultural Marketing Service (AMS), and resulted in the following recommendations (much condensed):

1. The AMS (now SRS) should request funds to develop further its work on agricultural employment statistics so as to permit the regular publication of state estimates relative to labor inputs including data permitting subgroupings by type of farm and other pertinent characteristics.
2. Efforts should be made to develop periodic measures of the amount of multiple job holding by farm workers and of the numbers of farm workers primarily engaged in non-farm work (reference to the double counting problems inherent in the SRS series.)
3. So as to increase the comparability between the SRS and BLS series, periodic checks of workers under 14 years of age should be made.
4. SRS should explore the feasibility of changing the reference week to mid-month instead of the last of the month.
5. Agricultural Censuses should continue to gather information on farm employment and wages to provide reliable data for benchmark use.

Following these Congressional hearings, several farm labor data gathering agencies published reports aimed at improving or revising their individual series.

In July, 1955, the Bureau of Employment Security (now USTES) conducted a study directed toward improving the information submitted on its pre-season and in-season farm labor reports. The study reviewed the various methods used in completing the report forms (25). Major emphasis of recommended improvements was in the area of collecting and estimating farm labor use more systematically and uniformly.

Data from the 1954 Agricultural Census served as a benchmark for revision of SRS estimates for the years after 1949 (20). For the first time, estimates of numbers of farm workers in most states were released. Particular emphasis was placed upon comparability of SRS and Census data. The use of almost indentically worded questions and similar reference weeks facilitated this objective. Quality checks made on Census data indicated that the number of farms had been undernumerated by about 8.1

percent. Adjustments to this condition were incorporated into the SRS revisions. In general, the revisions were small at the national level, but were relatively larger for parts of the country.

Similar revisions for the years 1954 and after were made following the 1959 Agricultural Census (21). In these revisions, June enumerative survey data were considered as well as the seasonal worker estimates made by USTES. As in earlier revisions, national estimates changed only slightly. A majority of the states had more sizeable revisions.

The continued involvement of the Federal Government in the role of influencing national growth and the general welfare through the maintenance of high levels of employment has placed labor statistics increasingly in the limelight. This was reflected in the appointment of the President's Committee to Appraise Employment and Unemployment Statistics. This group published a report in September, 1962 (22). The following recommendations for improvement in farm employment estimates reflect deficiencies requiring remedial action based on statements to the Committee.

Regarding the BLS labor force estimates, the Committee felt that additional emphasis should be devoted to:

1. Tabulating the amount of work done on farms by unpaid family workers who work less than 15 hours per week.
2. Periodic collection and tabulation of data on hours worked on each job by multiple jobholders.
3. Experimentation with the use of a special schedule for households including one or more farm workers which would emphasize unpaid family workers especially for women and for children under 14.

The Committee proposed that SRS estimates should be improved by one of two methods:

1. Strengthening the present system by improvement in a number of ways, including a substantial expansion of annual enumerative surveys for more adequate benchmark data.
2. Developing a multi-purpose probability sample to provide improved information on farming activities, including employment, hours, wage rates and related information.

The second alternative was favored by the Committee.

Although the Committee did not produce a detailed plan for the implementation of these recommendations, it did encourage the departments

concerned to make a determined effort to effect the proposals "with reasonable promptness." It also indicated that "a major effort to improve the farm employment series is required."

In response to a request by the Senate Committee on Appropriations, the Economic Research Service, USDA in 1967 prepared a comprehensive inquiry into many facets of the farm labor situation (*40*). In addition to detailed study of many other aspects of farm labor, the report included definitive suggestions to facilitate improvements in farm labor statistics. Among these recommendations were specific proposals to: (1) improve estimating procedures and methods of gathering data; (2) tabulate data for smaller areas than are now provided; (3) provide data relative to workers' characteristics and use by regions and commodities. An extensive list of proposed research which might aid in improving other aspects of the farm labor problem was also included.

These recommendations would result in significant improvement in farm labor statistics. Although it is too early to ascertain the degree to which they will be implemented, past results have not been encouraging.

Agricultural Work Force Data Needs

Society's cognizance of its need for knowledge about itself, and public responsibility for developing this knowledge, are attested to by the massive public resource expended annually in the collection and dissemination of statistics. In agriculture in particular, an appreciation of the value of sound statistics has given rise to the extensive agricultural data collection and estimation activities of the U. S. Department of Agriculture and other Federal agencies, the Federal-State Crop Reporting Service, and the Census of Agriculture.

In examining national sources of economic and social statistics, one is struck by the magnitude of data available on almost every aspect of agricultural inputs and products. One is also struck by the magnitude of the data available on almost every aspect of employment and the labor force. In both cases, however, agricultural labor stands in marked contrast to the general picture. Agricultural labor is given scant attention in general labor force and agricultural statistics. The result is that we know relatively little about the agricultural labor force, its composition or its employment. There is a dearth of knowledge of, and sophistication about agricultural employment among actual and potential members of the labor

force, agricultural industries, and public policy-makers which has rebounded to the detriment of workers, employers and society.

Labor data should be functional; that is, the collection and dissemination of data should arise out of specific needs and be collected and disseminated in such a way as to fill these needs. Thus an assessment of farm labor data needs, and recommendations for their improvement, requires an assessment of the potential users and uses of such data.

Reference has been made throughout this report to the need for agricultural labor data for functional geographic units. For many purposes functional geographic units are quite small. It has been pointed out that the only labor data uniformly available on units smaller than states are those reported by the Censuses of Agriculture and Population.[16/] These data are too infrequent and too limited to serve the needs of agricultural employers or workers. Thus the first recommendations made below discuss data needs not presently filled by any sources discussed in this report.

Workers' Labor Data Needs. Labor data of all types, including farm labor data, are needed by actual and potential members of the labor force as a basis for individual decisions about labor force participation. Decisions of labor force participants are affected only by those realities of which they are aware. Temporary and marginal workers, who constitute an important part of the seasonal agricultural labor force, are particularly likely to make decisions about whether and how to participate in the labor force based on the information most readily at hand. Thus, the functioning of the labor market can be affected by the availability of data for decision-making.

Actual and potential farm workers need information about job openings and the wage rates, fringe benefits and working conditions prevailing in these jobs. They also need to know the qualifications necessary to obtain these jobs. Ideally, workers should have access to such information about local and non-local jobs. Migratory farm workers in particular, need a reliable and current source of information on non-local job vacancies.

The local offices of the various State Employment Services are mandated to provide such information. One of the basic functions of the Employment Service is to serve as a clearinghouse of data between employers

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16/ Regular estimates of total agricultural employment in agricultural reporting areas are made by State Employment Services. These estimates, however, are based wholly on secondary rather than on primary data.

and potential workers. The agricultural industry, characterized by a large number of small employers, is particularly dependent on a centralized labor market information clearinghouse to give collective visibility to its job opportunities.

In order to function as an effective source of job market data to potential workers, Employment Service offices must be accessible to workers, workers must know about and seek the service of the office, and employers must list jobs with the Employment Service. Thus, the question of the adequacy of labor market data for individual worker decision-making concerns the organization and operation of the Employment Service.

A substantial proportion of temporary farm workers are obtained for seasonal farm jobs through local offices of the State Employment Service. Penetration of the permanent farm job market is relatively low. Most permanent farm workers and many seasonal workers rely on informal channels of job market information. It is likely that many prospective agricultural workers are without access to these informal channels of farm labor market information or that the information they receive is inaccurate.

Recommendations. If the public Employment Service is to fulfill its role as a clearinghouse for the gathering and dissemination of labor market information for agricultural workers, it must expand its penetration of the agricultural labor market, especially that for permanent and long-term seasonal workers. The Employment Service cannot effectively fulfill its role serving merely as a passive intermediary transmitting data between workers and employers. It must actively seek to acquire data on farm job openings and actively disseminate this information among all potential workers. This will require emphasis on solicitation of job orders and active worker recruitment programs.

Active solicitation of job orders would be facilitated through the maintenance of up-to-date files of employers in each local Employment Service office and regular canvassing of this list. Such lists would also be beneficial in the dissemination of labor market information to employers and the collection of statistical data suggested in the following sections. The acquisition of job vacancy data is an essential first step in servicing the data needs of actual and potential farm workers.

It is sometimes claimed that the relatively small proportion of permanent farm job openings handled through the Employment Service is related to the unattractiveness of these jobs compared to other openings

listed and the consequent poor record of the Employment Service in filling farm job orders. While there is probably a considerable element of truth in such claims, the fact that many of these jobs are eventually filled indicates that some potential farm workers are not being reached by the Employment Service through its usual means of communication in rural areas. There are elements of the potential and actual rural labor force for which farm jobs and other similar employment would represent attractive opportunities.

Many of the actual and potential members of the rural labor force are not conditioned, by attitude or experience, to make use of the Employment Service. Those persons not now being reached by the Employment Service must be identified and vigorous efforts to reach and service them must be made. This will require the identification of operational target groups and the development of informational channels appropriate to reach these groups where present methods are ineffective.

Communication of agricultural labor market information is hampered by the absence of a system for effectively classifying and describing agricultural job vacancies and the past experience of agricultural workers. Such a system is essential in an industry of as widely diverse skill requirements and levels of responsibility as agriculture. Inability to distinguish among various qualities of jobs leads to frustration in job seeking and the mismatching of workers and jobs. Current efforts to define agricultural occupations more precisely must be continued and the resulting classifications implemented. Job descriptions will have to be accompanied by suitable instruments or techniques for classifying job vacancies and employment records. Such a classification scheme could itself help to effect an improvement in the quality of agricultural jobs if vigorous educational efforts among agricultural employers accompany the implementation of the system. It would provide employers seeking to upgrade their job opportunities with standards for comparison, and provide means of assessing the quality of potential workers.

The merging of farm and non-farm placement activities in rural areas, as recommended in the recent report of a Task Force constituted to study the functioning of the Farm Labor Service, would facilitate the flow of complete job market information to workers. In the Northeast, the unique character of the "farm labor market" has all but disappeared, if in fact it ever existed. The merging of farm and non-farm placement activities

should serve to focus attention on the problems of the collection and dissemination of labor market information in rural areas. These problems prevail for all rural workers and employers.

Migratory farm workers have a special need for rapid access to reliable labor market data outside the immediate labor market area. At present there is no central clearinghouse for such information. Valuable days of work can be lost while crew leaders and Employment Service local office personnel seek work for crews encountering unforeseen delays or changes in schedule. A central location for reporting crews and work opportunities in each of the major migrant streams could help to streamline the job search and reduce frustration and uncertainty among workers.

Industry's Labor Data Needs. Actual and potential employers are a second important class of agricultural labor data users. Employers need labor market data for sound business planning. Improved knowledge of present and expected labor market conditions will enhance economic efficiency, ultimately benefiting not only the employer but workers and society generally.

Data needed by employers for business planning purposes relate to the quantity and quality of labor resources available in the labor market, and the wages, fringe benefits and conditions of employment necessary to obtain a specific quantity and quality of worker. Most farm employers have had little experience or training in labor market and personnel practices. They are active in the labor market only infrequently. They cannot accumulate for themselves the knowledge and experience of local labor market conditions of a large employer with a trained personnel department who is frequently or continuously in the labor market. Thus, farm employers are nearly totally dependent on secondary sources for their labor market information.

Data on nonagricultural employment, unemployment and earnings are available for many labor markets, but little data on agriculture is included in such statistics. Farm employers have little way of knowing about agricultural employment, wages or earnings, or about agricultural job openings and their characteristics in their area.

In addition to general labor market information, employers seeking personnel also need data on specific workers available, their skills and experience and the conditions under which they are available. Again, large employers can determine, through testing and evaluation, the data

relevant for their purposes. Small employers, including most farmers, have limited experience and ability at evaluating prospective workers and require more detailed prior knowledge of individual workers' characteristics.

Employers of seasonal labor in areas where seasonal farm labor demand is high relative to the size of the local labor force face the additional problem that many employers are seeking seasonal workers at the same time. The magnitude of this total demand will have considerable impact on labor market conditions during the season in which workers are required. In such areas producers need information on the likely magnitude of total demand so that adequate preparation to obtain the required workers can be made.

Recommendations. The primary source of local labor market information for farm employers is again the local office of the State Employment Service. The Employment Service is geared more toward providing data about potential jobs to workers than providing data about workers to employers. Strong emphasis is placed on referrals and placements, while relatively little effort is expended at disseminating general labor market information to those actually or potentially participating in the labor market.

Regular periodic reporting by local offices of the number and selected characteristics of job applicants and job openings would provide local employers with general information on local labor market activity. The more significant the volume of activity performed by the local office, the more useful such data would be. In addition, periodic data on employment, hourly earnings and average weekly hours by non-supervisory employees, such as are currently reported for manufacturing industries in some of the larger labor markets, should be gathered and disseminated. Though the cost of collecting these data from non-manufacturing employers would be substantial, many of these employers are among those most in need of them.

Making labor market data available is not sufficient, however. Educational and counseling programs for agricultural employers should be given serious consideration by the Employment Service as a means of increasing penetration of the farm labor market, improving the quality of agricultural jobs, and educating small employers on the operation of the local labor market. Group educational meetings and clinics should be held on a regular basis by local employment office personnel specifically trained and detailed to undertake such activities. This should be

supplemented by individual counseling with employers in the preparation of job orders and in the applicant referral process. Smaller employers with less skill and ability in evaluating potential employees need to be provided with more information about job applicants than other employers, and with assistance in interpreting this information. Education and counseling programs for small employers, leading to improvement in employment opportunities and a better matching of workers and jobs, would benefit both employers and workers.

In areas of intensive seasonal farm labor demand, the estimation of seasonal labor requirements and labor supplies needs to be refined. At present, pre-season job orders are placed by employers based largely on planting intentions and expected yields. These orders may or may not represent the bulk of actual expected seasonal employment in an area. The orders may or may not be revised as the season progresses. Actual labor used can vary widely from intentions. Last minute additions and reductions of orders are a common occurrence.

In areas of high seasonal labor demand, estimates of total labor demand and supply should be prepared and revised as the season progresses as a labor market monitoring activity apart from the servicing of job orders. This should begin with estimates of crop production based on plantings and expected yield and estimated number of workers per unit required to perform seasonal labor activities. Estimated local recruitment response and estimated non-local labor needs should then be prepared. These estimates should be revised periodically as the crop progresses and economic conditions in the labor market change. As historical data is accumulated, the accuracy of these estimates can be expected to improve. In this way, planning for the acquisition of sufficient seasonal labor could proceed on a more rational basis. Again, a central clearinghouse for such information would facilitate more rapid and accurate appraisals of areas of labor surplus and shortage and result in more efficient utilization of the available manpower supply and increased employment for workers than now occur.

Data Needs for Public Policy Formulation. In addition to workers and employers, public policy makers are important users of farm labor data. Society places on the public policy maker the responsibility for monitoring the public welfare. He must be aware of changes taking place in the economy and labor market and understand their implications so that measures can be planned to identify and avert potential problems.

Data on employment, unemployment and job vacancies are necessary to measure the adequacy of the work force and to plan for the maintenance of full employment. Knowledge of wage rates, actual earnings levels, fringe benefits and working conditions are necessary to assess the welfare of individual workers. These data should be comparable among farm and non-farm jobs. Data on units of work to be done by commodity and location and worker productivity by type of worker are necessary to indicate the direction and magnitude of fluctuations in labor demand and supply. Finally, knowledge of the characteristics of workers over time is necessary if public policy makers are to be able to understand the implications of economic growth and change and operate effectively on target labor force groups in implementing solutions to problems.

The data needed to monitor the public welfare and plan the broad outlines of national manpower policy are gross in nature. In monitoring more local problems and in implementation of public policy, labor data needs are likely to be somewhat more refined and specific. These data must relate to specific commodities, types of workers, time periods and geographical areas.

In considering farm labor data needs and making recommendations for the improvement of agricultural work force statistics, one must be candid about the problems involved. "Agriculture" is no more a single industry than is "manufacturing." It is a group of industries producing many different products, using different production techniques, and requiring different skills. It is a spatially extensive group of industries composed of many small producers. This particular characteristic poses severe problems in data collection. The fact that most branches of agriculture are subject to great seasonality compounds problems of labor data collection and interpretation. Under these circumstances, the cost of collecting data can quickly become prohibitive and some trade-off between economy and completeness is necessary.

The need for improvements in general agricultural labor data has been attested to on many occasions. Unfortunately, the cost of making improvements has often proved prohibitive. This has resulted partially from characteristics basic to the nature of agricultural production and the structure of agriculture, and partially from the exclusion of agricultural workers from much general labor legislation. This latter factor has not only reduced the apparent need for such data, but has resulted in

the exclusion of agriculture from data collected as a by-product of program administration.

Recommendations. Because of the high cost of obtaining agricultural data, the specific suggestions and recommendations made here are aimed principally at extension and refinement of existing data collection efforts and the aggregation and dissemination of existing data not presently generally available. In the longer run, if society is seriously committed to better understanding the nature of the agricultural labor force and labor market, and solving some of the more fundamental problems affecting agricultural labor and the rural economy, a more ambitious program of data collection and research than that outlined here will be required. This will have to be accompanied by a greater awareness of rural manpower problems among public officials and social research workers and a higher level of support for research in this field.

1. Employment and Wage Rates. One of the most basic statistics for labor force analysis is employment. There is an urgent present need for farm employment statistics by functional farm types and geographic regions. There is presently no source of labor force statistics which disaggregates the agricultural industry into its functional parts or that yields statistically reliable estimates at the state or smaller levels. The SRS mail survey data and the BES seasonal workers estimates approach what is needed, but neither source has much statistical precision nor includes sufficient significant detail. Furthermore, the two series are not sufficiently similar in coverage or concept that they are additive.

As noted earlier, the Statistical Reporting Service, USDA presently has an experimental plan for replacing its voluntary mail survey with an enumerative survey to provide farm employment and wage data. This enumerative survey can provide considerably more reliable data on farm employment and earnings than are provided by the present mail survey. Careful selection of four survey months will probably provide as much useful data as the present less accurate monthly estimates. At least once a year the survey sample should be sufficiently large to provide data for functionally useful geographic areas and farm types.

In addition to providing data on total farm employment, the enumerative survey would provide an opportunity to collect a modest amount of data on characteristics of farms and workers. Surveys to date have contained data on farm type (that is, major commodities sold), amount of sales

and amount of paid and unpaid family labor. Worker data collected included type of worker, wage rate and method of payment, total hours worked and wages earned. Other characteristics of farms and workers could also be enumerated.

The enumerative survey would also serve as a source of benchmark data for an improved seasonal farm labor data series. Such a series would still provide a useful source of data on monthly changes in farm employment, and on the source and activity of workers. However, to improve the usefulness of the BES seasonal farm labor series a number of improvements should be made in data collection procedures.

BES seasonal farm worker estimates are prepared from data reported by local employment service personnel on Form ES-223. At present, procedures used by local office personnel in obtaining the data for ES-223 forms are nearly as numerous as the individuals doing the job. Furthermore, there is not complete agreement on the definition of various worker source terms or on the precise reference period to which the data should apply. There is no standardized list of work activities, so that the degree of detail reported is left entirely to the discretion of the person filing the report. The resulting problems encountered in aggregating reports from several individuals are obvious. A further source of uncertainty is introduced by the arbitrary exclusion of all labor market reporting areas from the data series in any month in which 500 or fewer seasonal farm workers and no foreign workers are employed.

Standard procedures for the collection of BES seasonal farm employment data should be followed. These procedures should be standardized with respect to the methods that are followed to obtain employment data and the reference period to which data apply. A standardized list of terms should be used in reporting activities and sources of workers. More complete coverage of employers outside the fruit, vegetable and nursery industries must be obtained. The arbitrary 500 worker criterion should be dropped. Finally, local office personnel must be provided with the time and incentive to do a good job of obtaining and reporting this data.

Wage rates and earnings data are another group of basic labor force statistics. Wage rates and hours of work in an industry are indicators of the welfare of workers in that industry and the competitive position of employers in the labor market.

Measurement and interpretation of wage rate and earnings data in agriculture are complicated by several characteristics of agricultural employment:

a. numerous methods of payment and combinations of cash wages and perquisites,
b. absence of a specified work day or work week in many permanent jobs,
c. preponderance of piece rates in seasonal jobs,
d. the extremely wide range in composition of the hired farm work force with respect to age, skill levels and other characteristics affecting productivity, and
e. the wide range in skill requirements and decision making responsibilities required of the hired farm work force.

These characteristics make the calculation of average wage rates and earnings and the interpretation of such data nearly meaningless. On the other hand, reporting wage data and earnings of agricultural workers by meaningful job descriptions and worker characteristics would be prohibitively expensive. Valuing of perquisites is also extremely difficult.

Wage rates, collected by an enumerative survey of employers as recommended above, for specific characteristics of workers and farms, would improve the accuracy and usefulness of such data. Earnings of piece rate workers, not presently included in the SRS Crop Reporting Survey, should also be included. Although this would not eliminate all problems in interpreting wage rate data, such as the combining of various payment arrangements, it would greatly increase the utility of such data.

Prevailing wage rate data collected by the BES fulfills an important need in providing a measure of earnings of seasonal workers in areas of high seasonal labor demand. The data usually relate to a specific activity and geographic area thus controlling location, skill requirements and to some extent worker characteristics. However, collection procedures are not precise or uniform, thus undermining the value of the resulting data.

Even under the best of circumstances the comparison of farm and non-farm wage rate data is hazardous because of the difficulty in relating farm wage data to hours of work, the valuing of perquisites and the tremendous range in characteristics and productivity of individual workers.

Annual earnings of individuals and households provides a more meaningful basis for comparison of the economic welfare of agricultural and non-agricultural workers. National data for broad occupational groups are reported in the Current Population Reports of the U. S. Department of Commerce. More detailed data by region, characteristic of workers and labor force participation are reported in the ERS Hired Farm Working Force Reports for hired farm workers only. Since the Current Population Survey is the data source for the Hired Farm Working Force Reports, the collection and reporting of comparable non-farm data would be possible. The reporting of comparable data on non-farm workers and the pairing of earnings data of farm and non-farm workers with comparable characteristics would provide a far better basis for comparisons of farm worker earnings and the relative level of farm wages than are afforded by the present data.

2. Composition and Characteristics of the Farm Work Force. A more sophisticated knowledge of the composition of the farm work force and the characteristics of its members than we presently possess is required to properly assess the welfare of agricultural workers and the adequacy of labor supply, as well as to serve as a basis for program planning and implementation. As in the case of employment statistics, the most pressing need is for data disaggregated into meaningful units. The agricultural labor force includes workers with widely different skill levels working at a wide variety of jobs. It includes many workers who are not in the labor force most of the time or who are primarily engaged in other activities. Average characteristics of such a deverse group probably do not describe any component of it accurately.

Unfortunately, the cost of obtaining data on characteristics of the agricultural work force on a regular basis in meaningful detail would be prohibitive. From a practical standpoint, the data obtained in the Census of Population and the ERS Hired Farm Working Force Survey are about all that can reasonably be obtained. However, the utility of the data from the latter source is impaired by the lack of comparable data on non-farm workers.

Special topics are included in the Hired Farm Working Force Survey from time to time. These have included detailed enumeration of seasonal work patterns of the hired farm working force, detailed socio-economic

characteristics of workers, and special studies of migratory workers. This survey presents a unique opportunity for exploring special topics which should be continued and expanded. Subjects which especially merit additional study are: (1) the multiple jobholding patterns of migratory and farm-non-farm workers, (2) the stability of multiple jobholding patterns, (3) the location of residence and work of the temporary farm work force, (4) labor market information channels used by hired farm workers, and (5) skill levels or activities performed by hired farm workers. In addition, consideration should be given to reporting more data by class intervals rather than averages in order to ascertain how representative average data actually is. This would be an especially useful way of reporting total employment and earnings data.

Because of the infrequency of enumeration and the problem of seasonality of agricultural employment, the Censuses of Population and Agriculture are useful chiefly to provide benchmark data for the more frequent but less complete enumerations and as a source of data on more refined geographical units. The amount of labor data collected in the Agricultural Census has diminished considerably in the course of the past several enumerations. With the increasing importance of labor in agriculture, the Agricultural Census can and should include benchmark data on this input. In particular, each Census should provide for the enumeration of: (1) the annual cash wage bill, (2) number of permanent full-time (300 days or more) workers employed during the year, (3) number of long-term seasonal (150 days or more) workers employed during the year, (4) number of short-term seasonal (less than 150 days) workers employed during a reference week, (5) total number of workers employed at peak employment, and (6) farm and non-farm work of the farm operator and unpaid family workers.

3. Farm Labor Productivity. Productivity enters virtually every broad economic problem as it affects costs, production, prices, profits, investment and other economic phenomenon. The way to more effective economic policy would be clearer if productivity of labor and other resources were more precisely and accurately established.

A wide range in kinds and sets of statistics are used in developing the previously described estimates of farm production per unit of labor. On the output side, these chiefly involve data on quantities and qualities of goods and services produced and prices but also include

information on amounts and grades of intermediate resources used, their efficiencies and other items. Much remains to be done in improving these kinds of statistics but that is outside the scope of this inquiry.

Recommendations regarding improvement of statistics on farm employment and characteristics of workers have been listed previously. These improvements would facilitate more accurate measurement of farm labor input and thus its productivity. For example, the BLS measure of man-hours worked on farms assumes that all farm labor is homogeneous. That is, time worked by persons of different age, sex, skill and level of education is treated as though equivalent. Data on farm workers of different characteristics, the time they work and their earnings could be weighted into a more precise measure of labor input than is now possible.

As indicated previously, the BLS procedure in handling farm-non-farm multiple jobholders results in understating time worked on farms. Number of workers holding both a farm and non-farm job and the hours worked on each job should be determined more frequently. Such data are essential for accurate estimation of all hours of work contributing to farm production.

Currently, few resources are devoted to collection of data on labor requirements such as those by ERS in estimating farm labor input. Yet, farm production methods continue to change rapidly. More resources should be utilized in collecting and analyzing these types of data, particularly for labor intensive products and for new and perspective labor-affecting technology. In addition, the amount of overhead work performed on farms, such as machinery and building repair and management activities, should be determined more precisely.

4. The Farm Labor Market. Reference has been made in previous sections to the utility of local labormarket data for workers and employers. Aggregation of this data into state, regional and national totals would also be useful to public policy makers in assessing the adequacy of supply of farm labor. Data on selected characteristics of job applicants, job openings and placements tabulated by local Employment Service offices should be aggregated at the state and national levels. Important characteristics of job openings and placement data to be considered would be the industry, occupation and expected duration of the job. Information on expected duration would permit the separation of the large annual volume of agricultural placements reported by the Employment

Service into short-term recurring placements and placements in more permanent farm jobs. An important characteristic of applicants would be industry and occupation of previous employment. The value of this data would be limited by the extent of Employment Service penetration of the farm labor market, but even with limited penetration, it should serve as a barometer of the supply and demand for workers.

Data of this type would not answer one of the critical farm labor market data needs, that of an advance assessment of the adequacy of supply of seasonal workers for peak demand period. Pre-season labor demand and supply estimates such as recommended in the preceding section should be channelled through a central agency which would aggregate them and make initial assessments of the adequacy of labor supply and demand. As the season progresses and local estimates are revised, revised state, regional and national estimates should be prepared. These estimates of labor supply and demand would provide a basis for determining a need for policy decisions and the time to weigh alternative courses of action and implement the policy selected.

5. Expanding Farm Labor Knowledge. Hired labor and the acquisition and management of the labor input have, until recently, received scant attention from agricultural economists, farm management specialists, agricultural engineers and others. The reasons for this have been numerous, but chief among them was the prepondenance of labor supplied by the farm operator and unpaid members of his family. This is still the major source of agricultural labor.

A captive local pool and sources of supply of migratory and off-shore workers provided a reasonably reliable source of seasonal workers for those types of farming which required them. In this environment, problems of labor acquisition and management were of little importance. However, advancing agricultural technology has led to farm enlargement and pressures to increase the farm labor force at the same time that non-farm employment opportunities in rural areas are increasing, the supply of foreign workers has been nearly halted and rehabilitation, welfare and anti-discrimination programs are being vigorously pursued among traditional sources of seasonal and migratory workers. This has led to increasing need for and acceptance of the value of expertise in the various aspects of agricultural labor management.

These developments have created a need for knowledge in many facets of agricultural labor. Farm operators need to learn the rudiments of the operation of the labor market and competition with non-farm employers. Effective methods of recruitment and evaluation of potential workers need to be developed. Agricultural work routines need to be developed and effective training techniques devised. The most effective techniques for remuneration and management must be discovered. Farm employers must develop expertise in labor management.

In many cases, the knowledge and experience acquired in non-farm industry can probably be adopted to the agricultural environment. In other cases, new research will have to be undertaken. Many agencies share responsibility for developing and disseminating this knowledge, including the agricultural research and extension agencies of the agricultural colleges, the federal Departments of Agriculture and Labor, the state Employment Services, and the agricultural industry. In the long run, the "solution" of much of the farm labor problem rests on the development of this type of knowledge.

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APPENDIX

The following is a brief tabular guide to data on agricultural labor reported in the U. S. Censuses of Population and Agriculture for indicated years. Table numbers, titles and contents are consistent, state by state, as presented in each State Part of Volume I (Volume II of the 1950 Census of Population). Other volumes of each Census present data chiefly by subjects. Tables in these volumes are not listed as they mostly duplicate state totals in listed tables. They also include data for regions and the United States. In addition, under certain conditions other tabulations of data are available or can be obtained or purchased.

A. U. S. Census of Agriculture	Table Numbers[1/] 1950	1954	1959	1964
1. Operator characteristics (number, age, color, tenure, residence, farm- and off-farm work)	3, 5 (1, 2, 6)	3, 4 (2, 5)	3 (4, 5)	3, 17 (6, 7)
a. by type of farm	--	--	19	22
b. by economic class of farm	--	--	17	17
c. by tenure of operator	--	4	21	18
d. by size of farm	--	--	20	20
large-scale farms	13	--	--	23
2. Other income earned by members at operator households	5 (1, 6)	4 (5)	4 (5)	17 (7)
a. by type of farm	--	--	19	22
b. by economic class of farm	--	--	17	17
c. by tenure of operator	--	4	21	18
d. by size of farm	--	--	20	20
3. Unpaid family workers (number, hours worked)	9 (3, 6)	4, 7 (6)	5 (4, 6)	17 (7)
a. by type of farm	--	--	19	22
b. by economic class of farm	--	--	17	17
c. by tenure of operator	--	4	21	18
d. by size of farm	--	--	20	20
4. Expenditures for hired farm workers (farms reporting, expenditures)	9, 22, 23 (3, 6)	8 (6)	14, 17 (4, 7)	17 (5, 9)
a. by type of farm	21	10	15, 19	22
economic class of farm	--	--	19	22
expenditures per farm	--	--	18	21
b. by economic class of farm	22	8	14, 17	17
c. by tenure of operator	20	9	21	18
d. by size of farm	19	--	16, 20	20
large-scale farms	13	--	--	23
e. by age of operator	--	--	--	19
5. Regular hired workers[2/] (farms reporting, number)	9, 19, 22 (3, 6)	8 (6)	14, 16 (4, 6)	17, 20 (5, 8)
a. by type of farm	21	10	15, 19	22
economic class of farm	--	--	18	21
b. by economic class of farm	22	8	14	17
c. by tenure of operator	20	9	21	18
d. by size of farm	19	--	16	20
large-scale farms	13	--	--	23
e. by age of operator	--	--	--	19

B. U. S. Census of Population	1950	1960
1. Employed persons		
a. by sex	29, 31, 74	56
b. by place of residence	30, 31, 35 (48, 49)	56
c. by industry	30, 31 (43)	56
class of worker	74	56
d. by occupation	28, 35 (43)	57 (84, 91, 121)
color	76, 77	58
age	76	123
class of worker	77	84 (84)
2. Experienced unemployed		
a. by sex	--	60 (85)
b. by place of residence	(48, 49)	60 (85)
occupation	28, 35 (43)	60 (85)
color	--	60
3. Experienced civilian labor force		
a. by sex	75	120
b. by occupation	28, 73, 75	--
employed	28	120
earnings	78	124
household income	--	145
color of head	--	145
c. by industry	--	130
earnings	86	130

1/ Tables giving county data shown in parentheses.

2/ Much of these data are reported for seasonal hired workers also, in addition, data on hours worked, wage rates and basis of pay reported for all hired workers except in 1964. For additional explanation see text.