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Concepts and Methods
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Employment and Unemployment
from the Current Population Survey

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United States Department of Labor
W. Willard Wirtz, Secretary

Bureau of Labor Statistics
Ewan Clague, Commissioner

United States Department of Commerce
Luther H. Hodges, Secretary

Bureau of Census
Richard M. Scammon, Director

CONCEPTS AND METHODS USED IN HOUSEHOLD STATISTICS ON EMPLOYMENT AND UNEMPLOYMENT FROM THE CURRENT POPULATION SURVEY

This report describes the concepts and methods used in the Census Bureau's Current Population Survey, which is conducted each month with a scientifically selected sample representing the noninstitutional civilian population of the United States. This survey provides monthly statistics on employment, unemployment, and related subjects which are analyzed and published by the Bureau of Labor Statistics of the U. S. Department of Labor.¹

These monthly statistics are first issued in a summary press release within 2 weeks after completion of the survey. More detailed information is published about a week or two afterwards in the Labor Department's Monthly Report on the Labor Force and, subsequently, in Employment and Earnings. These two publications also incorporate data from surveys of business establishments and from the unemployment insurance system.

Concepts

The concepts of the labor force and unemployment now in use were introduced in the latter stages of the depression of the 1930's, chiefly in the interest of deriving more objective measurements of unemployment and employment than were previously available. These concepts have been modified only slightly since their inception 25 years ago.

Prior to the thirties, aside from attempts in some of the decennial censuses, there were no direct measurements of the number of jobless persons. With the development of mass unemployment in the early thirties, the need for statistics became urgent and widely conflicting estimates based on a variety of indirect techniques began to make their appearance. As a result of dissatisfaction with these methods, many research groups, as well as State and municipal governments, began experimenting with direct surveys of the population or samples of the population. In these surveys, an attempt was made to classify the population as in or out of the labor force, or as employed or unemployed, by means of various series of questions addressed to each individual. In most of the surveys, the unemployed were defined as those who were not working but were "willing and able to work." This concept, however, did not meet the standards of objectivity that many technicians felt were necessary in order to measure not only the level of unemployment at one time but changes over periods of time. The criterion "willing and able to work," when applied in specific situations, appeared too intangible and too dependent upon the interpretation and attitude of the person being interviewed.

¹ In addition to the collection of labor force data, the Current Population Survey is used extensively by the Bureau of the Census to update decennial census statistics for the country as a whole on such subjects as education, migration, family size and composition, income, fertility, and housing vacancies. On an increasing scale, it has also been used to collect information for many other Government agencies on a wide range of subjects which are best approached through household interviews.

NOTE: This report supersedes Current Population Reports, Series P-23, No. 5, issued by the Bureau of the Census on May 9, 1958. It incorporates changes instituted in the program since that date.

Out of this experimentation, a set of concepts was developed in the late 1930's which sought to meet these various criticisms. According to these concepts, the classification of an individual was to be dependent principally upon his actual activity within a designated time period, i. e., whether working or looking for work, or doing something else. These concepts were adapted for the national sample survey initiated by the Works Progress Administration in 1940. Although there have been improvements in measurement techniques, these concepts have been used in substantially unchanged form since that date, both in the Current Population Survey and in the decennial censuses.

In measuring activity, the time period selected for the monthly survey was a calendar week. Several considerations led to adopting a calendar week as the survey reference period. First of all, the period used must be short enough so that the data obtained would be "current" and the time reference would not tax the memory of the person giving the information. Second, it must not be so short that the occurrence of holidays or other accidental events would cause extremely erratic fluctuations in the information obtained. A calendar week seemed to fulfill these conditions as well as being a convenient and easily defined period of time.

The criteria used in classifying persons on the basis of their activity are described below:

Employed persons. Employed persons comprise (1) all those who, during the specified week, did any work at all as paid employees or in their own business or 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, and (2) all those who were not working or looking for work but who had jobs or businesses from which they were temporarily absent because of illness, bad weather, vacation, or labor-management dispute, or because they were taking time off for various other reasons. Excluded from the employed group are persons whose only activity consisted of work around the house (such as own home housework, painting or repairing own home, etc.) or volunteer work for religious, charitable, and similar organizations.

Unemployed. Unemployed persons include those who did not work at all during the survey week and were looking for work.² Those who had made efforts to find jobs within the preceding 60-day period--such as by registering at a public or private employment agency, writing letters of application, canvassing for work, etc.--and who, during the survey week, were awaiting the results of these efforts are also regarded as looking for work. Also included as unemployed are those who did not work at all during the survey week and:

- a. Were waiting to be called back to a job from which they had been laid off; or
- b. Were waiting to report to a new wage or salary job scheduled to start within the following 30 days (and were not in school during the survey week); or
- c. Would have been looking for work except that they were temporarily ill or believed no work was available in their line of work or in the community.

²Note that persons who worked during the survey week but also looked for work (by registering at an employment agency or in any other manner) are classified as employed rather than unemployed, since the activity of working is given the highest priority in the system used.

Labor force. The civilian labor force comprises the total of all civilians classified as employed or unemployed in accordance with the criteria described above. The total labor force also includes members of the Armed Forces stationed either in the United States or abroad. The monthly survey is confined to the civilian population, with the information on the size of the Armed Forces obtained from official records. The data relate to persons 14 years old and over. In the United States most children under 14 do relatively little work because of laws which restrict child labor, laws regarding compulsory school attendance, and general social custom.

Not in labor force. All persons 14 years of age and over who are not classified as employed, unemployed, or in the Armed Forces are defined as "not in labor force." These persons are further classified as "engaged in own home housework," "in school," "unable to work" because of long-term physical or mental illness, and "other." The "other" group includes for the most part retired persons, individuals reported as too old to work, the voluntarily idle, and seasonal workers for whom the survey week fell in an "off" season and who were not reported as looking for work. Persons doing only incidental unpaid family work (less than 15 hours in the specified week) are also classified as not in labor force. Occasionally, usually annually, the institutional population is also sampled for purposes of special tabulations and comparisons with previous decennial census data. The inmate population, when covered, is classified as not in labor force.

The category "not in labor force--in school" includes persons attending school during the survey week who had new jobs to which they were scheduled to report within 30 days. Persons--whether or not attending school--who had new jobs not scheduled to begin until after 30 days (and not working or looking for work) are classified as not in labor force.

Data Collected and Published

The Current Population Survey (CPS) provides a large amount of detail not otherwise available on the economic status and activities of the population of the United States. It is the only source of estimates of total employment--both farm and nonfarm; of nonfarm self-employed persons, domestics, and unpaid helpers in non-farm family enterprises as well as wage and salaried employees; and of total unemployment, whether or not covered by unemployment insurance. It is the only comprehensive source of information on the personal characteristics of the total labor force and of the employed and unemployed, such as age and sex, race, marital and family status, veteran status, and educational background.

It provides the only available distributions of workers by the numbers of hours worked (as distinguished from aggregate or average hours for an industry), permitting separate analyses of part-time workers, workers on overtime, etc. The survey is also the only comprehensive current source of information on the occupation of workers (whether engineers, stenographers, carpenters, laborers, etc.). It also provides limited statistics on the industries in which they work.

Information is available in the survey not only for persons in the current labor force but also for those who are outside the labor force, the so-called "labor reserve." The characteristics of such persons--whether married women with or without young children, disabled persons, students, older retired workers, etc.--can be determined. Also, through special inquiries, it is possible to obtain information on their skills and past work experience, if any.

Monthly publication. Each month, a significant amount of basic information about the labor force is published by the Labor Department in the Monthly Report

on the Labor Force³ and, in somewhat greater detail, in Employment and Earnings. The following major categories of data are provided:

1. Unemployed persons

Number of unemployed and rate of unemployment by sex and age, color, marital status, and relationship to the household head

Rate of unemployment by major industry and occupation group

Unemployed by duration of unemployment, including a distribution of the long-term unemployed by sex, age, color, marital status, and major industry and occupation group

Unemployed persons by whether seeking full-time or part-time work, by sex, age, and major occupation group

2. Employed persons

Persons employed in agriculture and in nonagricultural industries by sex and age, class of worker, occupation group (about 30 categories) and color, and number of hours worked during the survey week

Total and nonagricultural employed persons by full- or part-time status and reasons working part time

For persons at work in nonagricultural industries, distribution by full- or part-time status and number of hours worked, by major industry group (wage and salary workers only), major occupation group, sex and age, marital status, and color. In these distributions, part-time workers (those reporting less than 35 hours) are further divided into those working limited hours because of economic factors and those on part time by choice or for other noneconomic reasons.

Persons at work in agriculture and in nonagricultural industries by class of worker and number of hours worked

Persons with a job but not at work during the survey week by reason not working and whether paid for time off

3. Labor force - Total and civilian labor force by sex and age and by color, and total labor force participation rates

4. Not in labor force - Persons not in labor force by sex and age and by color, by main activity during survey week (keeping house, going to school, unable to work, and remainder)

5. Seasonally adjusted data - Adjusted data are provided for the major series, including unemployment rates of all civilian workers, adult men and women, teenagers, married men, and experienced wage and salary workers. Also published is a measure of labor force time lost through unemployment and involuntary part-time employment.

³Prior to July 1959, these data were issued in a report bearing the same name published by the Bureau of the Census in Current Population Reports, Series P-57.

Other data. The regular labor force survey is supplemented by a program of additional inquiries, coordinated with the monthly enumerations, designed to provide more detailed statistics on special aspects of economic activity. The results of these studies are usually published by the Department of Labor in a series of Special Labor Force Reports after appearing in articles in the Monthly Labor Review.⁴ Some examples of these are given below:

1. Work Experience of the Population in (year). Number and characteristics of persons who worked at all during the course of a calendar year, including number of weeks worked; time lost because of unemployment, and other reasons; characteristics of longest job held during the year; and related facts.

2. Multiple Jobholders. Number and characteristics of persons who hold two or more jobs during the survey week.

3. Employment of Students and Employment of High School Graduates and Dropouts. Educational level of workers and extent, type of employment of those currently enrolled in school, and employment status of recent high school graduates and school dropouts.

4. Marital and Family Characteristics of Workers. Labor force trends among married women and the family characteristics of workers.

5. Income of Families and Persons in the United States: (year) Annual personal and family income cross-classified by numerous personal and economic characteristics (issued by Bureau of the Census in Current Population Reports, Series P-60).

6. Labor Force and Employment in (year). Annual reports on the labor force summarizing the monthly statistics and major developments for the year.

7. Periodic special reports and tabulations summarizing data collected monthly--such as on characteristics of nonwhite workers, in detailed studies of hours worked or duration of unemployment, and detailed findings on selected characteristics of women workers, and the like.

8. Special technical reports on seasonal adjustments, labor force projections, concepts, and similar matters.

The Survey Design

The Current Population Survey sample is located in 357 sample areas comprising 701 counties and independent cities with coverage in every State and the District of Columbia. In all, some 40,000 housing units and other living quarters are designated for the sample at any time, of which about 35,000 containing about 80,000 persons 14 years and over are occupied by households eligible for interview. The remainder are units found to be vacant, converted to nonresidential use, containing persons with residence elsewhere, and others for which no interview is required. Of the occupied units eligible for enumeration, about 4 to 6 percent are not interviewed in a given month because the residents are not found at home after repeated calls, are temporarily absent, or are unavailable for other reasons.⁵

⁴Earlier reports on these topics were issued by the Bureau of the Census in Current Population Reports, Series P-50.

⁵For a far more detailed description of the sample design and other technical phases of the program, see U. S. Bureau of the Census, Technical Paper No. 7, "The Current Population Survey--A Report on Methodology," Washington, D. C., 1963.

Selection of sample areas. The entire area of the United States consisting of 3,128 counties and independent cities was divided into 1,913 primary sampling units. With some minor exceptions, a primary sampling unit (PSU) consists of a county or a number of contiguous counties. Each of the 212 standard metropolitan statistical areas (SMSA) constituted a separate PSU. In combining counties to form PSU's each PSU was defined so as to be as heterogeneous as possible. Greater heterogeneity could be accomplished by including more counties. However, another important consideration was to have the PSU sufficiently compact in area so that a small sample spread throughout it could be efficiently canvassed without undue travel cost. A typical primary sampling unit, for example, included both urban and rural residents of both high and low economic levels and provided, to the extent feasible, diverse occupations and industries.

The PSU's were then grouped into 357 strata. Among these PSU's, 107 of the largest standard metropolitan statistical areas (including all over 250,000 inhabitants) and five other areas (not SMSA's) were strata by themselves. In general, however, a stratum consisted of a set of PSU's as much alike as possible in various characteristics such as geographic region, population density, rate of growth in the 1950-1960 decade, percentage nonwhite, principal industry, type of agriculture, and so on. Except for the 112 areas mentioned above, each of which is a complete stratum, the strata were established so that their sizes in terms of 1960 population were approximately equal. Where a PSU was a stratum by itself, it automatically fell in the sample. From each of the other strata, one PSU was selected in a random manner for inclusion in the sample, the selection having been made in such a way that the probability of selection of any one unit was proportionate to its 1960 population. For example, within a stratum the chance that a PSU with a population of 50,000 would be selected was twice that for a unit with a population of 25,000.

The resulting 357 areas are those in which the survey is being conducted. For the most part, these areas would remain in the sample until the results of the next decennial census are available.

Selection of sample households. For each stratum an overall sampling ratio of 1 in 1,662 is used at the present time (1964). The sampling ratio used in each particular sample area (sample PSU) depends on the proportion that the sample area population, at the time of the 1960 Census, was of the stratum population. Thus, in a sample area which was one-tenth of the stratum, the within-PSU sampling ratio which results is 1 in 166.2 achieving the desired ratio of 1 in 1,662 for the stratum. For PSU's which are strata by themselves, the sampling ratio is 1,662 regardless of the size of the PSU.

Within each of the 357 PSU's, the number of households to be enumerated each month is determined by the application of the within-PSU sampling ratio rather than through the assignment of a fixed quota. This procedure makes it possible for the sample to reflect any shifts in population. For example, if on the basis of the 1960 Census a sample ratio of 1 in every 150 is used in a sample area, the number of households found in the sample will be larger than that obtained by a fixed quota in areas where the number of households has increased since the census. In areas where the number of households has declined, the number of sample households selected will be smaller. In this way, the sample properly reflects the changing distribution of the population and avoids the distortion which would result from the application of fixed quotas of households, or persons, based on the population at an earlier date.

Within each designated PSU, several stages of sampling may be used in selecting the units to be enumerated. The first step is the selection of a sample of Census enumeration districts (ED's), which are administrative units used in the 1960 Census and contain, on the average, about 250 households. These are selected systematically from a geographically arranged listing, so that the sample ED's are spread over the entire PSU. The probability of selection of any one ED is proportionate to its 1960 population.

The next step is to select a cluster of approximately 6 households to be enumerated within each designated ED. This is done, wherever possible, from the list of addresses for the ED compiled during the 1960 Census or, if the addresses are incomplete or inadequate, by area sampling methods. The address lists are used in about two-thirds of the cases, primarily in urban areas, whereas area sampling is applied in the remainder. Prior to the recent redesign of the sample, area sampling was used throughout. The change to list sampling, where feasible, was made because it permits a greater control over cluster size and thereby results in somewhat reduced sampling errors; it is also a somewhat more economical procedure. In using the Census lists, a systematic sample of clusters of 18 consecutive addresses is selected from the ED and every third address within the cluster is designated for the current sample. This provides a slightly more reliable sample than would be the case for a cluster of 6 consecutive units, and the remaining 12 units in the larger cluster are available for future samples.

The list sample is supplemented by a selection of the appropriate proportion of units newly constructed in the PSU since the Census date, which is obtained mainly from records of building permits maintained by the offices responsible for issuing permits in that area. A special procedure of updating parts of the Census lists is also followed to reflect units missed in the Census or new construction in areas where there is no adequate system of building permits.

In those enumeration districts where area sampling methods are used--mainly rural areas--the ED's are subdivided into segments, that is, small land areas with well-defined boundaries having in general an expected "size" of about six housing units or other living quarters. Where roads, streams, and other terrain features that could be used to subdivide an enumeration district were insufficient, some of the resultant segments may be several times the desired average "size" of six households. For each subdivided enumeration district, one segment is designated for the sample, with the probability of selection proportionate to the estimated "size" of the segment. Where available advance information indicates that a selected segment contains about six households, all units within the segment boundaries are included in the sample. In cases where the advance information indicates a segment "size" of several times six units, a field listing is made of all living quarters in the segment and a systematic sample drawn so as to achieve the equivalent of a segment which is canvassed completely.

Rotation of sample. Part of the sample is changed each month. A primary reason for rotating the sample is to avoid the problems of lack of cooperation which arise when a constant panel is interviewed indefinitely. Another reason for replacing households is to reduce the cumulative effect of biases in response which are sometimes observed when the same persons are interviewed indefinitely. To accomplish this rotation of the sample on a gradual basis, mapping and other materials for several samples are prepared simultaneously. For each sample, eight systematic subsamples (rotation groups) of segments are identified. A given rotation group is interviewed for a total of 8 months, divided into two equal periods. It is in the sample for 4 consecutive months one year, leaves the sample during the following 8 months, and then returns for the same 4 calendar months of the next year. In any 1 month, one-eighth of the sample segments are in their first month of enumeration, another eighth are in their second month, and so on, with the last eighth in for the eighth time (the fourth month of the second period of enumeration). Under this system, 75 percent of the sample segments are common from month-to-month and 50 percent from year-to-year. This procedure provides a substantial amount of month-to-month and year-to-year overlap in the panel (thus reducing discontinuities in the series of data) without burdening any specific group of households with an unduly long period of inquiry.

Survey techniques. The field organization consists of 12 Regional Offices, each staffed by a regional director and a staff of program assistants. During CPS enumer-

ation week each month and all or part of the preceding and following week, the majority of the supervisory staff members devote their time to preparations for control and supervision of this survey. During other periods, the staff collects statistics concerning business and various other subjects. They supervise, in total, a staff of about 700 part-time interviewers, of whom about 550 are Current Population Survey interviewers.

Each month, during the calendar week containing the 19th day, these interviewers contact some responsible person in each of the sample households in the Current Population Survey. At the time of first enumeration of a household, the interviewer visits the household and prepares a roster of the household members, including their personal characteristics (date of birth, sex, race, marital status, educational attainment, veteran status, etc.) and their relationship to the household head. This roster is brought up to date at each subsequent interview to take account of new or departed residents, changes in marital status, and similar items. The information on personal characteristics is thus available each month for identification purposes and for cross-classification with economic characteristics of the sample population.

Personal visits are required in the first, second, and fifth month that the household is in the sample. In other months, the interview may be conducted by telephone if the respondent agrees to this procedure. Also, if no one is at home when the interviewer visits, the telephone may be used to obtain the information after the first month. Approximately 25 percent of the households are interviewed by telephone.

At each monthly visit, the interviewer asks a series of standard questions on economic activity during the preceding week (the calendar week containing the 12th day of the month, called the "survey week") for each household member 14 years of age and over. The primary purpose of these questions is to classify the sample population into three basic economic groups--the employed, the unemployed, and those not in the labor force.

Additional questions are asked each month to help clarify the information on employment status. For the employed, information is obtained on hours worked during the survey week, together with a description of the current job. If these persons worked less than 35 hours during the survey week, information is obtained on the reasons they were working part time, primarily to distinguish between those whose hours are restricted because of slack work conditions or other economic factors and those working part time by choice or for personal or noneconomic reasons. For those temporarily away from their jobs, the reason for not working during the survey week is obtained as well as information on whether or not they were paid for the time off. For the unemployed, information is obtained on the length of time they have been looking for work, whether they are seeking full- or part-time work, and a description of their last full-time civilian job. For those outside the labor force, their principal activity during the survey week--whether keeping house, going to school, or doing something else--is recorded.

The questionnaires used in the survey are of the so-called "FOSDIC"⁶ type, a process developed for and used in the 1960 Census. For most items, the interviewer fills in a small circle representing the correct answer using an ordinary lead pencil. The questionnaires are microfilmed and the film is "read" by the FOSDIC machine, which translates the information directly to computer tape without requiring the preparation of punchcards. The procedure reduces coding to a minimum, since

⁶These are the initials of a reading device developed by the Bureau of Standards for the Bureau of the Census (Film Optical Sensing Device for Input to Computers).

the position of each circle on the form represents a code signal. Of the standard monthly questions, coding is required only for occupation and industry, for which the interviewers enter a description.

Estimation Procedure

The FOSDIC schedules (questionnaire forms) containing the information obtained for each person in the sample are received in the Washington office by the end of the week after enumeration. The raw data are transferred to computer tape and checked for completeness and consistency. Estimates could be prepared by tabulating the data for each person with a fixed weight (the reciprocal of the sample ratio--1,662 at present) after accounting for households that were not interviewed. However, to increase the reliability of the labor force statistics derived from the sample, two stages of ratio estimates and a "composite estimate" are used. It is possible to achieve this rather complicated procedure rapidly and automatically because of the availability of high-speed electronic digital computers. The principal steps involved are as given below.

Adjustment for households not interviewed. The weights for all interviewed households are adjusted to the extent needed to account for units occupied by persons eligible for interview but for which no interview was obtained because of absence, impassable roads, refusals, or unavailability for other reasons. This adjustment is made separately by groups of PSU's and, within these, for each color (white, nonwhite) residence (urban, rural nonfarm, rural farm) group of households. This adjustment is made separately within each pair of rotation groups (the incoming pair, the two continuing pairs, and the outgoing pair). The proportion of sample households not interviewed for the above stated reasons is usually about 4 to 6 percent.

Ratio estimates. The distribution of the population selected for the sample may differ somewhat, by chance, from that of the Nation as a whole in such basic characteristics as age, color, sex, and farm-nonfarm residence, among other things. These particular population characteristics are closely correlated with labor force participation and other principal measurements made from the sample. Therefore, some of the sample estimates can be improved substantially when, by appropriate weighting of the original returns, the sample population is brought as closely into agreement as possible with the known distribution of the entire population with respect to these characteristics. Such weighting is accomplished through two stages of ratio estimates as follows:

1. First stage. The first stage of ratio estimates takes into account differences at the time of the last census in the distribution by color and residence of the population estimated from the sample PSU's and that of the total population in each of the four major regions of the country. Independent distributions of the total population by residence, cross-classified by color, are not available on a current basis. Instead, using 1960 Census data, estimated population totals by color and residence for a given region were computed by appropriately weighting the Census counts for PSU's in the CPS sample. Ratios were then computed between these estimates (based on sample PSU's) and the actual population totals for the region as shown by the 1960 Census. Such a ratio estimate does not imply that the ratio existing in 1960 would be unchanged at a current date. In deriving these ratios, PSU's that comprised entire strata and automatically were selected for the sample (usually referred to as "self-representing" PSU's) were excluded from the computations, since they represent only themselves. In tabulations of the monthly results from the Current Population Survey, the weights for all sample households from non-self-representing PSU's in a given region are multiplied by the population ratio for that region for the appropriate color-residence group.

2. Second stage. The second stage of ratio estimates takes account of current differences between the population distributions of the sample and that of the Nation as a whole by age, color, and sex. Independent estimates of the entire population, by these characteristics, are prepared each month. They are calculated by carrying forward the most recent census data (1960) to take account of subsequent aging of the population, mortality, and migration between the United States and other countries.⁷ The CPS sample returns (taking into account the weights determined after the first stage of ratio estimates) are, in effect, used to determine only the percentage distribution within a given age-color-sex group by employment status and various other characteristics. In developing statistics in absolute numbers, these percentage distributions are multiplied by the independent population estimate for the appropriate age-color-sex group.

Composite estimate. The last stage in the preparation of estimates makes use of a composite estimate. In this procedure, a weighted average is obtained of two estimates for the current month for any particular item. The first estimate is the result of the two stages of ratio estimates noted above. The second estimate consists of the composite estimate for the preceding month to which has been added an estimate of the change in each item from the preceding month to the present month based upon that part of the sample which is common to the 2 months (75 percent). While the weights for the two components of such a composite estimate do not necessarily have to be equal, in this instance the weights used for combining these two estimates are each one-half. Equal weights in this case satisfy the condition that for virtually all items there will be some gain in reliability over the estimation procedure after the first two stages of ratio estimates.

This composite estimate results in a reduction in the sampling error for most important statistics from the survey beyond that achieved after the two stages of ratio estimates described above; for some items the reduction is substantial. The resultant gains in reliability are greatest in estimates of month-to-month change, although gains are also obtained for estimates of level in a given month, change from year-to-year, or change over other intervals of time.

Adequacy of the Data

Problems of concept. As discussed earlier, the basis of the labor force classification used in the Current Population Survey is the activity of an individual during a particular calendar week each month. Obviously, a person could have engaged in more than one activity during the period. Thus, in classifying persons, it is necessary to assign a priority to the various activities for which information was obtained. In this way, an individual is classified in only one group and unduplicated totals of the employed, the unemployed, and persons outside the labor force can be obtained.

In this classification system, the highest priority is assigned to the activity "working." Thus, if a person did any work--as defined in the concepts--during the survey week (that is, 1 or more hours for pay or profit, or 15 or more hours without pay in a family-operated enterprise), he is classified as "at work" and is included with the employed, even though he may also have looked for work, gone to school, or done something else.

⁷See U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 276, Nov. 19, 1963, for a description of the methods used in preparing these independent population estimates.

The activity "looking for work" is given second priority in the classification scheme. If a person did not work at all during the survey week but was looking for work, he is regarded as in the market for a job and is classified as unemployed. In defining the unemployed, a slight departure was made from a strict "activity" concept for some cases. It was recognized that, under certain circumstances, some persons, although unemployed in any realistic sense, might not be looking for work continuously. For example, in a one-plant town, if the plant is shut down most workers would have no alternative but to wait until the plant reopens and probably would not be actively looking for work. However, it would be difficult to justify not classifying these workers as unemployed. Thus, the definition of unemployed persons was expanded to include certain groups (frequently termed the "inactive unemployed") who, although not actively looking for work in the specified week, report that they would have been doing so except for such special circumstances.

Some modification of the "activity" concept was made also in the case of the employed. It was recognized that, if activity alone during a calendar week is considered, large numbers of persons who have definite job attachments but were temporarily absent from work in the survey week for reasons such as illness, vacation, or bad weather, would be excluded from the labor force count. Because, in most cases, their absence would not exceed a week or two, it was believed that their exclusion from the labor force would result in an unrealistic count of the economically active population. Moreover, unless looking for other jobs, they most logically belonged with the employed because they had jobs reserved for them in the economy. Therefore, a third category was set up within the labor force. This category consists of persons who were neither working nor looking for work but who had jobs or businesses from which they were temporarily absent because of illness, vacation, bad weather, or some other such reason during the survey week. This group, "persons with jobs but not at work," is measured separately but is added to the "at work" group to derive estimates of the total number of employed persons.

The classification as employed of persons working only a few hours in the survey week has been the subject of much discussion. It has been suggested that when hours of work fall below a certain level (less than 15 hours, for example) these persons are more properly classified as partially unemployed. Information is provided in the published reports each month on hours worked by employed persons, so that the changes in the extent of full-time or part-time work can be readily observed. Furthermore, the questions asked each month of part-time workers show how many are working short hours because of economic factors and how many are doing so because they want, or are available for, only part-time employment.

The use of a fairly short period of reference (1 week each month) imposes certain limitations on the interpretation of the data, particularly in trend analysis. Although the effects of factors such as adverse weather conditions, strikes, holidays, etc., are less marked in a 1-week period than they would be if the time reference were shorter, say 1 day, they may nevertheless significantly influence the figures when they occur during the survey week. For example, unfavorable weather in some parts of the country may result in an apparent decline in farm employment in a given week as compared to the same period of the preceding year, although no significant economic change has actually taken place. Workers on strike may report themselves as looking for other employment, thereby increasing the unemployed total, although they will return to their old jobs when the dispute is settled. A legal holiday during the survey week is not likely to affect employment levels appreciably, but reported hours of work will decline. Such factors must, consequently, be taken into account in any interpretation and evaluation of the published figures.

In general, it is not possible to develop one or two overall figures, such as the number of unemployed, that will be adequate to describe the whole complex of labor market phenomena. Consequently, the Current Population Survey is designed

to provide a large amount of detailed and supplementary data which are available for use in interpreting and adjusting the broad totals to meet a wide variety of needs on the part of users of labor market information.

Sources of errors in the survey estimates. The estimates from the survey are subject to sampling errors, that is, errors arising from the fact that the estimates each month are based on information for a sample instead of for all persons in the population. In addition, as in any survey work, the results are subject to errors in the field and to errors that occur in the process of compilation.

Classification errors in labor force surveys may be particularly large in the case of persons with marginal attachments to the labor force. These errors may be caused by interviewers, respondents, or both, or may arise from faulty questionnaire design. The interviewers on the Current Population Survey are chiefly part-time workers, although most of the staff at any time consists of persons who have had repeated experience on the survey for some years. They are given intensive training when first recruited and also have either direct or home study training each month prior to the survey. Moreover, through editing of their completed questionnaires, repeated observation during enumeration, and a systematic reinterview of part of their assignments by the field supervisory staff, the work of the interviewers is kept under control and errors or deficiencies are brought directly to their attention.

In spite of these controls, interviewers may not always ask the questions in the prescribed fashion. To the extent that varying the wording of the questions results in differences in response, this factor may result in some errors or lack of uniformity in the statistics.

Similarly, the data are limited by the adequacy of the information possessed by the respondent and the willingness to report accurately. Usually a single respondent, generally the housewife, reports for the entire family. The respondent may not know all the facts about family members or may be unable to report adequately on their attitudes or intentions. For example, the housewife will probably know that her husband is working, but she may not always know exactly how many hours he worked or the precise nature of his job.

The estimates from the survey are subject to various other types of errors beyond those already mentioned. Some of these are:

1. Nonresponse. About 4 to 6 percent of occupied units are not interviewed in a typical month because of temporary absence of the occupants, refusals to cooperate, or various other reasons.⁸ Although an adjustment is made in weights for interviewed households to account for noninterviews, they still represent a possible source of bias. Similarly, for a relatively few households, some of the information is omitted because of lack of knowledge on the part of the respondent or because the interviewer forgot to ask certain questions or record the answers. In processing the completed questionnaires, entries are usually supplied for omitted items on the basis of the distributions in these items for persons of similar characteristics.

2. Independent population estimates. The independent population estimates used in the estimation procedure (see discussion under "Ratio estimates," p. 9) may also provide a source of error, although on balance their use substantially improves the statistical reliability of many of the important figures. Errors may arise in the independent population estimates because of under enumeration of certain population

⁸Although the survey is conducted on a strictly voluntary basis, refusals to cooperate have averaged only about 1 percent since its inception.

groups or errors in age reporting in the last census (which serves as the base for the estimates) or similar problems in the components of population change (mortality, immigration, etc.) since that date.

3. Processing errors. Although there is a quality control program on coding and a close control on all other phases of processing and tabulation of the returns, some errors are almost inevitable in a substantial statistical operation of this type. It is likely, however, that the net error arising from processing is fairly negligible.

Measuring the accuracy of results. Modern sampling theory provides methods for measuring the range of errors due to sampling where, as in the case of the Current Population Survey sample, the probability of selection of each member of the population is known. Methods are also available for measuring the effect of response variability in the Current Population Survey. A measure of sampling variability indicates the range of difference that may be expected because only a sample of the population is surveyed. A measure of response variability indicates the range of difference that may be expected as a result of compensating types of errors arising from practices of different interviewers and the replies of respondents; these would tend to cancel out in an enumeration of a large enough population. In practice, these two sources of error--sampling and response variability, as defined above--are estimated jointly from the results of the survey. The computations do not, however, incorporate the effect of response bias, that is, any systematic errors of response such as those that would occur, if, by and large, respondents tended to overstate hours worked. Response biases occur in the same way in a complete census as in a sample, and, in fact, they may be smaller in a well-conducted sample survey because there it is feasible to pay the price necessary to collect the information more skillfully.

Estimates of sampling and response variability combined are provided in the Monthly Report on the Labor Force and in other reports based on the Current Population Survey, thus permitting the user to take this factor into account in interpreting the data. In general, smaller figures and small differences between figures are subject to relatively large variation and should be interpreted with caution. The availability of the high-speed electronic computer makes it possible to provide considerably more detail on this subject than was possible earlier.⁹

The measurement of response bias is one of the most difficult aspects of survey and census work. Systematic studies on this subject are now an integral part of the Current Population Survey¹⁰, but in many instances available techniques are not sufficiently precise to provide satisfactory estimates of the errors from response biases. A good deal of experimentation is in progress with the aim of developing more precise measurements and improving the overall accuracy of the series.

Quality Control Program

Because of the crucial role of the interviewers in securing accurate and complete returns, a great deal of time and resources are devoted to maintaining the quality of their work. The major aspects of this program are described briefly below:

1. Initial training. New interviewers recruited for the survey are given special intensive training the first 3 months they are on the job. The program

⁹For a detailed description of the method of calculation of sampling errors, see Bureau of the Census, Technical Paper No. 7, op. cit., pp. 50-59.

¹⁰For a summary of these studies, see Bureau of the Census, Technical Paper No. 6, "The Current Population Survey Reinterview Program--Some Notes and Discussion," March 1963.

includes approximately 10 hours of advance home study; 1-1/2 days of classroom lectures, discussions, and practice; at least 3 days of on-the-job training and observation; and, in subsequent months, special follow-up home-study and review materials.

2. Refresher training. Prior to each monthly enumeration, experienced interviewers are given 3 to 4 hours of home study including review exercises and similar materials. Several times a year the interviewers are convened for day-long group training and review sessions.

3. Observation. At least once a year each experienced interviewer is accompanied by a supervisor for about 1 day in the course of the actual survey, in order to determine how well he understands and applies the concepts and procedures. In addition to such corrective action and retraining as may be needed, a rating sheet is prepared in the course of observation which becomes part of the interviewer's record. Interviewers requiring additional attention are observed more frequently, at the option of the Regional Office.

4. Reinterview. On the average of twice a year, a subsample of the work of each interviewer is reinterviewed (though a second interview with the household) by a supervisor in order to determine whether the correct information was obtained. The interviewers do not know when their work will be checked or which units will be in the subsample, although they are aware of the general nature of the reinterview program. Where the information differs between the reinterview and the initial interview, the supervisor seeks to determine which answers were correct and (where the original information was incorrect) the reasons for the discrepancies. Errors attributable to the interviewers are brought to their attention and--where the discrepancies exceed certain prescribed limits--special training, observation, and further checking are provided. In addition to its value as a check on particular interviewers, this system provides some data on the quality of the survey in general.¹¹

5. Inspection of returns. In addition to these other measures, the completed questionnaires are carefully inspected each month both in Regional Offices and in Washington. The results of this inspection, together with information from the observation and reinterview programs, serve as a basis for orienting training materials to the indicated needs of the interviewers. The results of these various checks may also lead to the replacement of interviewers who--in spite of special attention and training--are unable to meet the prescribed standards of quality.

Chronology of Major Improvements Made in the Current Population Survey

The major changes made in the Current Population Survey since 1942 are described briefly below:

1. Sample revision, 1943. In late 1943, the sample as taken over from the Works Progress Administration (WPA) was modified to make it more representative of the Nation as a whole and converted entirely to a probability basis. The revised sample was spread over 68 sample areas comprising 125 counties and independent cities. By mid-decade the sample consisted of about 25,000 total units each month.

2. Revision in CPS schedule, July 1945. In July 1945, the questionnaire was revised to introduce the four basic employment status items which are still in use today. Before that time, the schedule did not contain specific question wording.

¹¹For a detailed description of this program and its results, see Bureau of the Census, Technical Paper No. 6, op. cit.

Special studies showed that this and other defects resulted in the exclusion from the labor force statistics of large numbers of part-time and intermittent workers, particularly unpaid family workers. The question wording of these four items has been modified slightly on one or two occasions since 1945, but their basic content has been unchanged.

3. Revision in sample selection method, August 1947. In August 1947, the method of selecting sample units within a sample area was changed so that each selected unit would have the same basic weight in the tabulations. This change simplified tabulation procedures and estimation methods.

4. Introduction of special dwelling places, July 1949. In July 1949, the sample coverage was extended to special dwelling places--hotels, institutions, motels, trailer camps, etc. This led to improvements in the statistics since residents of these places have somewhat different characteristics from the remainder of the population.

5. Introduction of document sensing, February 1952. In February 1952, the CPS schedule was converted to a document-sensing card. In this procedure (replaced more recently by the FOSDIC system), entries were made by drawing a line through the oval representing the correct answer, using a special pencil with electrographic lead. Punchcards were automatically prepared from the schedules via a special document sensing machine.

6. Shift to 1950 Population Census data for ratio estimates, January 1953. Starting in January 1953, population data from the 1950 Census were introduced into the computation of the ratio estimates used in the Current Population Survey estimation procedure (see page 9 for description of these ratio estimates). Prior to that date, the ratio estimates had been based on 1940 Census relationships for the first stage ratio estimate and 1940 Population Census data brought forward to take account of births, deaths, etc., for the second stage ratio estimate. In September 1953, "color" was substituted for "veteran status" in the second stage ratio estimate, making it feasible to publish some separate absolute numbers for white and nonwhite persons, where as only percentage distributions had previously been provided.

7. Change to 4-8-4 rotation system, July 1953. In July 1953, the present sample rotation system was adopted, whereby households are interviewed for 4 consecutive months one year, leave the sample for 8 months, and return for the same period of 4 months of the following year. Prior to that time, households were interviewed for 6 consecutive months and then replaced. The new system provided some year-to-year overlap in the sample, thus improving the measurement of the statistics over time. (See page 7 for further details.)

8. Conversion of tabulations to high-speed electronic equipment, September 1953. In September 1953, the CPS tabulations were first transferred to high-speed electronic computers. This change speeded up the tabulations considerably and made possible improvements in estimation methods and a substantial expansion in the scope and content of the tabulations for basic data and computation of sampling variability. (A shift to more modern computers was made in 1959 and this process will continue as the Bureau's equipment is updated and replaced.)

9. Changeover to 230-area sample, February 1954. In February 1954, the CPS sample was expanded from 68 to 230 sample areas, although retaining the overall sample size of 25,000 total units. The 230 areas comprised 453 counties and independent cities. At the same time, a substantially improved estimation procedure (composite estimate) was introduced which took advantage of the large overlap in the sample from month to month. These two changes improved the reliability of most of the major statistics by an amount equivalent to that of doubling the sample size.

10. Addition of monthly questions on part-time workers, May 1955. In May 1955, monthly questions on the reasons for part-time work were added to the standard set of employment status items. This information had been collected quarterly or less frequently in the past and was found to be highly valuable in studying current labor market trends.

11. Changes in survey week, July 1955. In July 1955, the CPS survey week was changed to the calendar week containing the 12th day of the month (which is also the week ending nearest the 15th of the month) for greater consistency with the time reference of other statistics in the employment field. Previously, the survey week had been the calendar week containing the 8th day of the month.

12. Expansion to 330-area sample, May 1956. In May 1956, the CPS was expanded from a 230-area to a 330-area sample. The overall sample size was increased by roughly two-thirds to a total of about 40,000 units (35,000 occupied units). The expanded sample covered 638 counties and independent cities with at least some coverage in every State. All of the former 230 areas were continued in the expanded sample. The expansion increased the reliability of the major statistics by around 20 percent and made possible publication of greater detail, including more data for regions and other large geographic groupings.

13. Change in employment status definition, January 1957. Starting in 1957, two relatively small groups of persons formerly classified as employed, under "with a job but not at work," were assigned to different classifications, as a result of a comprehensive interagency review of the Government's employment and unemployment data. These groups were persons on layoff with definite instructions to return to work within 30 days of the layoff date and persons waiting to start new wage and salary jobs within 30 days of interview. Most of the persons in these two groups were shifted to the unemployed classification. The only exception was the small subgroup in school during survey week and waiting to start new jobs which was transferred to "not in labor force." The changes in definition did not affect the basic questions or enumeration procedures; the new classifications for the groups affected are determined by coding in Washington.

14. Seasonal Adjustment, June 1957. Limited seasonally adjusted data on unemployment were introduced in "The Monthly Report on the Labor Force" early in 1955. Some extension of the data--using more refined seasonal adjustment methods programed on electronic computers--was instituted in June 1957, including a seasonally adjusted rate of unemployment and charting of seasonally adjusted total employment and unemployment. Significant improvements in methodology grew out of research conducted at the BLS and Census Bureau in the ensuing years. The BLS began to publish seasonally adjusted data in much greater detail in the February 1963 issue of the Monthly Report on the Labor Force. At the present time, extensive use is made of seasonally adjusted data in the textual analyses and charts of this same report every month and in special analyses in other BLS publications. A short description of the present method of seasonal adjustment for labor force data was published in the January 1964 issue of the Monthly Report on the Labor Force. A technical description of the method, "The BLS Seasonal Factor Method (1964)," may be obtained (free, while the supply lasts) from the Division of Statistical Standards, Bureau of Labor Statistics, Washington, D. C. 20210.

15. Transfer of functions, July 1959. In July 1959, responsibility for analysis and publication of the labor force statistics from the Current Population Survey was transferred to the Bureau of Labor Statistics as part of a major exchange of statistical functions between the Commerce and Labor Departments. The Bureau of the Census continues to collect and tabulate these statistics as an agent of the Bureau of Labor Statistics.

16. Addition of Alaska and Hawaii into the CPS sample, January 1960. Upon achieving statehood, Alaska and Hawaii were introduced into the sample survey, thereby increasing the number of areas in the sample from 330 to 333. The addition of data for these two States affected the comparability of labor force data with previous years. This inclusion has resulted in an increase of about half a million in the noninstitutional population 14 years and over and about 300,000 in the labor force, four-fifths of this in nonagricultural employment. The levels of other labor force categories were not appreciably changed.

17. Conversion to FOSDIC system, October 1961. In October 1961, the CPS questionnaire was converted to the FOSDIC type used in the 1960 Census, whereby entries are made by filling small circles with an ordinary lead pencil. Microfilms of these questionnaires are scanned by a special mechanical reading device which transfers the information directly to computer tape. This system permits a larger-sized form and a more flexible arrangement of items than the previous document-sensing procedure, and does not require the preparation of punchcards.

18. Updating of sample, December 1961-March 1963. During this period, the CPS sample was revised gradually to reflect the changes in population size and distribution revealed by the 1960 Census. The overall sample size was unchanged (40,000 total units and 35,000 households eligible for interview) but the number of sample areas was increased slightly to 357 PSU's to provide for greater coverage in fast-growing sections. Also, in a major part of the sample, selection of units from Census lists was introduced to replace area sampling (see page 7 for an explanation). These changes resulted in a further gain in reliability, of perhaps 5 percent or so, for most statistics. The use of updated information from the Census was introduced in April 1962 into the first and second stage ratio estimates used in the CPS (see pages 9 and 10).

19. New information, January 1963. In January 1963, in response to recommendations of a special review committee,¹² two new items were added to the monthly questionnaire. The first was an item, formerly carried only intermittently, on whether the unemployed were seeking full- or part-time work. The second was an expanded item on family relationship, formerly included only annually, to provide more detail on the level of family responsibility of unemployed persons. Various other recommendations of the committee are under study or in various stages of testing and research.

About half of the major improvements listed above relate to changes in methods of sample selection, estimation, or processing of the data. Only one of these involved an actual expansion in the number of households in the sample--the May 1956 expansion to the 330-area sample. However, each of the other improvements resulted in gains in the precision of the survey results and thus had the same effect as an increase in the sample size, without incurring the additional cost of an increase. It is interesting to note that if the same sampling and estimation methods were used now as in 1943, when the probability sampling methods were first introduced in CPS, a sample from 1-1/2 to 3 times larger than the current size would be necessary to produce estimates with the present level of reliability. This increase in efficiency varies somewhat from item to item. Among major labor force categories, the gain has been greatest for estimates of agricultural employment, for which the current reliability is equivalent to that of a sample 2-1/2 times as large, using the methods employed in 1943. For nonagricultural employment and unemployment, the gains are equivalent to an 80 and 70 percent increase in sample size, respectively.

¹²For these and other recommendations and a thorough review and appraisal of the household survey system, see Measuring Employment and Unemployment, Report of the President's Committee to Appraise Employment and Unemployment Statistics, U. S. Government Printing Office, Washington, D. C., September 1962.

Comparability With Related Data

Household and establishment employment statistics. Employment data from the Current Population Survey (CPS) are obtained by household interview and differ in some basic respects from related series based on reports from business establishments and farms. First, the household approach provides information on the work status of the entire population, without duplication, since each person is classified as employed, unemployed, or not in the labor force. Reports from nonagricultural establishments provide a payroll count, and consequently exclude persons who are not on a business payroll, such as proprietors, self-employed persons, unpaid family workers, and domestic servants. Persons who worked at more than one job during the survey week, however, are counted more than once in the establishment series. These persons are counted only once in the CPS and are classified in the job at which they worked the greatest number of hours.

Second, only part of the "with a job but not at work" group, included in the CPS employment total, appears on payrolls and would be counted in establishment reports. Persons on paid vacation or sick leave are included in both types of series. Workers absent without pay such as those on strike or on unpaid vacation or sick leave, however, are not on payrolls and would therefore not be counted in establishment statistics.

Finally, the CPS and the current establishment statistics series are each subject to sampling variability and response errors, which may result in differences in both trends and levels.

Household unemployment series and unemployment insurance data. For a number of reasons, the unemployment estimates from the Current Population Survey are not directly comparable with figures on unemployment insurance claims although both series tend to show similar general trends.

The CPS series include all persons who did not work at all during the survey week and were looking for work or were waiting to be called back to a job from which they had been laid off, regardless of whether or not they were eligible for unemployment insurance. Figures on unemployment insurance claims exclude persons who have exhausted their benefit rights, new workers who have not earned rights to unemployment insurance, and persons losing jobs not covered by unemployment insurance systems (agriculture, State and local government, domestic service, self-employed, unpaid family work, nonprofit organizations, and firms below a minimum size).

In addition, the qualifications for drawing unemployment compensation differ from the definition of unemployment used in the household survey. For example, persons with a job but not at work and persons working only a few hours during the week are sometimes eligible for unemployment compensation, but are classified as employed rather than unemployed in the household survey.