

READING ROOM
CURRENT POPULATION REPORTS

FOR RELEASE

May 9, 1958

Washington 25, D. C.

MAY 9

Series P-23, No. 5

MAIN
READING ROOM

CONCEPTS AND METHODS USED IN THE CURRENT EMPLOYMENT AND UNEMPLOYMENT
STATISTICS PREPARED BY THE BUREAU OF THE CENSUS

(This report supersedes Current Population Reports, Series P-23, No. 2, issued July 30, 1954, and No. 3, issued July 15, 1956. It incorporates changes instituted in the Current Population Survey since those dates)

Current information on employment, unemployment, and related data are compiled each month from the Current Population Survey of the Bureau of the Census. This survey is conducted each month with a scientifically selected sample representing the noninstitutional civilian population. The major results are announced in the Combined Employment and Unemployment Release issued jointly by the Departments of Commerce and Labor. The joint release, issued as a press statement, presents not only information from the survey but also related data from the Department of Labor. Fuller details from the Current Population Survey are issued in the Bureau of the Census "The Monthly Report on the Labor Force," Current Population Reports, Series P-57.¹ A description of the concepts and methods used in the preparation of these statistics follow.

CONCEPTS

The concepts of the labor force and unemployment used in the Bureau of the Census Current Population Survey were introduced in the latter stages of the depression of the

¹ Available on subscription from the U. S. Government Printing Office at \$2.00 per year (\$2.50 for foreign mailing), including monthly labor force reports in Series P-57, special labor force reports in Series P-50, and consumer income reports in Series P-60.

thirties, 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 almost two decades 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, widely conflicting estimates began to make their appearance. As a consequence, 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.

Out of this experimentation, there was developed in the late thirties a set of concepts 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, i.e., whether working or looking for work, or doing something else, within a designated time period. Although there were improvements in measurement techniques, these concepts were used, in substantially unchanged form, in the 1940 Census, in the Current Population Survey, and in the 1950 Census.

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 time reference for the surveys. 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. Prior to 1957, the statistics also included in the group "with a job but not at work" persons on layoff who had definite instructions to return to work within 30 days of the date of layoff--now classified as unemployed--and persons waiting to report to new wage and salary jobs scheduled to start within the following 30 days, now classified either as unemployed or (if in school during the survey week) as not in the labor force. Excluded from the employed group are persons whose only activity con-

sisted 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. 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.

Prior to 1957, part of group (a) above--those whose layoffs were for definite periods of less than 30 days--were classified as employed (with a job but not at work) rather than as unemployed, as were all of the persons in group (b) above (waiting to start new jobs within 30 days).

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, those 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 unemployed. Persons doing only incidental unpaid family work (less than 15 hours) 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. When covered, the inmate population is classified as not in labor force.

Since January 1957, the category "Not in labor force--in school" includes a small group formerly classified as employed (with a job but not at work), namely, 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 great deal of detail on the economic status and activities of the population of the United States not otherwise available. It is the only source of estimates of total employment--both farm and nonfarm; of nonfarm self-employed, domestics, and unpaid helpers in nonfarm 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, educational background, and various others. It provides the only available distributions of workers by the numbers of hours worked (as distinguished from aggregate or average hours for an industry), whereby it is possible to study separately part-time workers, workers on overtime, etc. The survey is also the only major current source of information on the occupations 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 data.--Each month, certain basic information and selected details are published in "The Monthly Report on the Labor Force," Current Population Reports, Series P-57. The following major categories of data are provided:

1. Estimates of the total labor force, agricultural and nonagricultural employment, unemployment, and persons outside the labor force by age and sex, and by color and sex.
2. Percentage distributions of the population by employment status, by marital status and sex, and for major geographic regions.
3. Estimates for the employed by occupation (27 categories) and class of worker (private wage and salary employees, government workers, self-employed workers, and unpaid family helpers).
4. Percentage distribution of persons at work in agriculture and nonagricultural industries by number of hours worked (with separate information for class-of-worker groups plus information on average hours worked). More limited hours distributions for nonagricultural workers are provided by age and sex, color, marital status, and major industry and occupation groups. In these distributions, part-time workers (those reporting less than 35 hours) are subdivided into those working limited hours because of slack work and other economic factors and those on part time by choice or for other noneconomic reasons.
5. For employed persons with jobs but not at work, reasons for absence from work as well as percent receiving pay for the time off.
6. For the unemployed, duration of unemployment (distribution by number of weeks looking for work or on layoff from jobs).

7. Seasonally adjusted rate of unemployment (unemployment as percent of civilian labor force).

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 in Current Population Reports, Series P-50. Some examples of these are given below:

1. 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, illness, and other reasons; characteristics of longest job held during the year; and related facts.

2. Number and characteristics of persons who hold two or more jobs at the same time.

3. Educational level of workers and extent and type of employment of those currently enrolled in school.

4. Labor force trends among married women and the family characteristics of workers.

5. Annual personal and family income cross-classified by numerous personal and economic characteristics (Series P-60).

6. 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 characteristics of nonwhite workers, detailed studies of hours worked or duration of unemployment, detailed characteristics of women workers, and the like.

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

THE SURVEY DESIGN

The Current Population Survey sample is spread over 330 sample areas comprising 638 counties and independent cities with coverage in every State and the District of Columbia.

A total of 42,000 dwelling units and other living quarters are designated for the sample at any time, and completed interviews are obtained each month from about 35,000 households containing over 80,000 persons 14 years old and over. Of the remaining sample households, about 1,500 are those from which information should be collected but is not because the occupants are not found at home after repeated calls, are temporarily absent, or are unavailable for other reasons. The other 5,500 designated units represent those found to be vacant, occupied by persons with residences elsewhere, demolished units or those converted to nonresidential use, and the like.

The present sample size and distribution of areas have been in effect since May 1956. Prior to that date, during the period January 1954 through April 1956, the sample consisted of around 21,000 interviewed (25,000 total) households distributed over 230 areas. All of the areas in the 230-area sample were continued in the expanded 330-area sample in May 1956. The sample in effect prior to 1954 also consisted of around 21,000 interviewed households but was more restricted in geographic distribution, covering only 68 sample areas.

Selection of sample areas.--The entire area of the United States consisting of 3,103 counties and independent cities was divided into 1,891 primary sampling units. With some minor exceptions, a primary sampling unit (PSU) consists of a county or a number of contiguous counties. Each standard metropolitan area (SMA) 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 330 strata. Among these PSU's, 88 of the largest standard metropolitan areas (including all over 300,000 inhabitants) and certain other areas 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 1940-1950 decade, percentage nonwhite, principal industry, type of agriculture, and so on. Except for the 88 SMA's mentioned above and the 4 other areas, each of which is a complete stratum, the strata were established so that their sizes in terms of 1950 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 manner that the probability of the selection of any one unit was proportionate to its 1950 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 330 areas are those in which the survey is being conducted.

Selection of sample households.--For each stratum an over-all sampling ratio of about 1 in 1,380 is used at the present time (1958). 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 1950 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 138, achieving the desired ratio of 1 in 1,380 for the stratum.

Within each of the 330 PSU's, area sampling methods are used in the selection of specific households. In each PSU, 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 1950 Census a sample ratio of 1 in every 138 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.

In the application of area sampling methods, several stages of sampling were used within each selected PSU. First, a sample of administrative units used for the 1950 Censuses of Population and Housing (enumeration districts) was selected, with the probability of selection of any one of these proportionate to its 1950 population. These selected enumeration districts were then subdivided into segments, that is, small land areas with well-defined boundaries having in general an expected "size" of about six dwelling 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 were several times the desired average "size" of six households. For each subdivided enumeration district, one segment was designated for the sample, with the probability of selection proportionate to the estimated "size" of the segment. For the Nation as a whole, approximately 6,000 segments are in the sample in any given month. Where available advance information indicated that a selected segment contained about six households, all units within the segment boundaries were to be included in the sample. In cases where the advance information indicated a segment "size" of several times six units, a field listing was to be 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.

In subdividing enumeration districts into segments and in determining in advance the approximate "size" of each segment, use was made of various materials. In the larger urban places, information concerning the number of units in each block was obtained from Block Statistics bulletins published from results of the 1950 Censuses of Population and Housing for 209 of the cities of 50,000 inhabitants or more. In conjunction with these bulletins, considerable use was made of large-scale Sanborn maps, which are available commercially, are relatively up to date for most medium-size and large urban centers, and show the general outline of each structure within blocks. Where such maps were not available, the location and number of dwelling units in small geographic areas bounded by roads, streams, etc., were

obtained either from maps used by interviewers in the 1950 Censuses of Population and Housing or from special field visits. Enumeration districts in urban centers--where mapping materials were generally more precise--were more readily subdivided into compact segments (averaging six units) than were those in rural areas; but a substantial proportion of the resultant rural segments were of this size also. Some variation in actual segment size arose also where the mapping materials, although sufficiently detailed, were out of date because of substantial new construction or because they contained errors.

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. 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 eight months, divided into two equal periods. It is in the sample for four consecutive months one year, leaves the sample during the following eight months, and then returns for the same four calendar months of the next year. In any one 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 17 Regional Offices, each headed by a regional supervisor, and a staff of program assistants. During CPS enumeration week each month and all or part of the preceding and following weeks, most of the supervisory staff members devote their time to preparations for and control and supervision of this survey. During other periods, the staff is occupied with the collection of 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 prepares a roster of the household members, including their personal characteristics (date of birth, sex, race, marital status, and veteran status) 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 then available each month for identification purposes and for cross-classification with the economic characteristics of the sample population.

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.² 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

² Prior to July 1955, the survey week was the one containing the 8th day of the month and the enumeration was taken in the week containing the 15th. The change in time reference was made primarily for greater consistency with the time reference of other data in the field.

were paid for the time off. For the unemployed, information is obtained on the length of time they have been looking for 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 a special form known as "document-sensing" schedules. Instead of writing down the information, the interviewer, for most items, draws a mark through an oval representing the correct answer, using a special type of pencil. Forms prepared in this fashion can be converted into punchcards by a special document-sensing machine, thus avoiding manual punchcard preparation. The procedure also reduces coding of answers to a minimum, since the position of each oval on the form itself represents a code signal.

ESTIMATION PROCEDURE

The document-sensing 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 converted to punchcards by means of a mechanical document reproducer. Estimates could be prepared by tabulating these cards with a fixed weight (the reciprocal of the sample ratio--approximately 1,380 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 occupied households 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 sepa-

ately 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 3 to 5 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 1950 Census data, estimated population totals by color and residence for a given region were computed by appropriately weighting the data for sample PSU's. Ratios were then computed between these estimates (based on sample PSU's) and the actual population totals for the region as compiled in the 1950 Census. Such a ratio estimate does not imply that the ratio existing in 1950 would be unchanged at a current date. The estimates from sample PSU's were based on the total census counts, not on sample survey counts. In deriving these ratios, self-representing PSU's were excluded from the computations, since they represent only themselves in the CPS sample. 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 class.

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 (1950) to take account of subsequent aging of the population, mortality, and migration between the United States and other countries.³ 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 two months (75 percent). While the weights for the two components of such a composite estimate are not necessarily 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, and 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 or change from year to year or 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, one 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.

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

³ See U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 170, Dec. 18, 1957, for a description of the methods used in preparing these independent population estimates.

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 Series P-57 report 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 (one 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 one-week period than they would be if the time reference were shorter, say one 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 with 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 over-all 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. The fact that this is a recurrent survey, however, operating under a tight time schedule, restricts the kinds of questions that may be asked. Many types of useful information, such as need for work, future job-seeking intentions, and reasons for present status, are less feasible in a recurrent than in a one-time survey.

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 processes 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. They are better trained than most field survey workers, having had repeated experience on this survey and having received a period of either direct or home study training each month prior to the survey. Moreover, thorough editing of their completed questionnaires, repeated observation during enumeration, and a systematic recheck 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 3 to 5 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.⁴ 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 interviewed 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 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. 7) 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 underenumeration of certain population 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

⁴ Although the survey is conducted on a voluntary basis, refusals to cooperate have averaged only a fraction of 1 percent since its inception.

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," Current Population Reports, Series P-57, and in other reports based on the Current Population Survey, and the interpretation of data in the text of these reports is made in the light of the possible variability in the figures. 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.

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 Survey, 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 over-all 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.--Now interviewers recruited for the survey are given special intensive training the first three months they are on the job. The program includes classroom lectures, discussions, and practice; on-the-job training and observation; and special home-study and review materials.

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

3. Observation.--On the average of twice a year, each interviewer is accompanied by a supervisor for about one 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 re-training 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. Recheck.--On the average of three times a year, a subsample of the work of each interviewer is reinterviewed (through a second interview with the household) by a supervisor in order to determine whether the correct information was obtained. 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.

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 recheck 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 effective sample consisted of about 21,000 interviewed households each month (25,000 total).

2. Revision in CPS schedule, July 1945.--In July 1945, the questionnaire was modified to include the four basic employment status items still in effect. Before that time, the schedule did not contain specific question wording. 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 modified 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. This change eliminated manual preparation of punchcards and substantially reduced the amount of coding and other processing required before tabulation.

6. Shift to 1950 Census Population 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 7 for description of these ratio estimates). Prior to that date, the ratio esti-

mates had been based on 1940 Census relationships for the first stage ratio estimate and 1940 Census Population data brought forward to take account of births, deaths, etc., for the second stage ratio estimate. In September of 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, whereas 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 four consecutive months one year, leave the sample for eight months, and return for the same period of four months the following year. Prior to that time, households were interviewed for six 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 6 for further detail.)

8. Conversion of tabulations to high-speed electronic equipment, September 1953.--In September 1953, the CPS tabulations were transferred to high-speed electronic equipment, the Bureau's electronic computer. 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.

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 over-all sample size of 21,000 interviewed 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 (items 27 and 28) 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 from about 21,000 to 35,000 interviewed households. The expanded sample covers 638 counties and independent cities and there is 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. (See Series P-23, No. 3.)

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 on enumeration procedures; the new classifications for the groups affected are determined by coding in Washington. (See "The Monthly Report on the Labor Force: February 1957," Series P-57, No. 176, for further details.)

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 programmed on the Bureau's electronic computers--was instituted in June 1957, including a seasonally adjusted rate of unemployment and charting of seasonally adjusted total employment and unemployment. A description of the method and presentation of seasonal adjustment factors in some detail may be found in "Seasonal Variations in the Labor Force, Employment, and Unemployment," Current Population Reports, Series P-50, No. 82, April 1958.

COMPARABILITY WITH RELATED DATA

Household and establishment employment statistics.--Employment data published in "The Monthly Report on the Labor Force" 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 non-agricultural 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 but are classified in the job at which they worked the greatest number of hours in the Current Population Survey (CPS) series.

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 on strike during the survey week, 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 of the Bureau of the Census are not directly comparable with figures on unemployment compensation claims or claims for veterans' readjustment allowances, although both series tend to show similar general trends. In the first place, certain persons such as private household workers and State and local government workers are usually not eligible for unemployment compensation. Also, the qualifications for drawing unemploy-

ment compensation differ from the definition of unemployment used by the Bureau of the Census. 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 by the Bureau as employed. Furthermore, some persons may be reported as not looking for work even though they might consider themselves available for jobs and be eligible for unemployment compensation.