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## CONCEPTS AND METHODS USED IN THE CURRENT LABOR FORCE STATISTICS PREPARED BY THE BUREAU OF THE CENSUS

(This report supersedes Current Population Reports, Labor Force, "Labor Force Memorandum No. 5," issued November 8, 1950. It incorporates changes in methods and procedures instituted in the Current Population Survey since that date, primarily in sample design and estimation procedure)

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 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 the information from the survey together with 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. A discussion of the underlying concepts and a description of the 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 thirties, chiefly in the interest of deriving more objective measurements of unemployment and employment than were previously available.

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 have been improvements in measurement techniques, these concepts have been 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 so that 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:

Labor force.--The labor force comprises all civilians who are employed or unemployed, and persons in the Armed Forces. Since the number of persons in the Armed Forces is available from official records, the monthly survey is confined to the civilian population. 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.

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, labor-management dispute, or because they were temporarily laid off with definite instructions to return to work within 30 days of layoff. Also included are persons who had acquired new jobs or were about to begin new enterprises, at which they were scheduled to start work within 30 days. 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.--This group includes all persons who did no work at all (as defined above) in the survey week and who 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. Included with the unemployed, although they were not actually looking for work, are certain special groups known as the "inactive unemployed." These are persons who report they would have been looking for work except that they were temporarily ill, they were awaiting recall to a job from which they were on indefinite layoff or layoff exceeding 30 days, or they believed no work was available in their line of work or in the community. These groups are included since, under particular circumstances, such persons, although genuinely in the market for jobs, are not likely to be actively looking for work.

#### DATA PUBLISHED

Every month, estimates of the employment status of the population 14 years old and over are published in "The Monthly Report on the Labor Force," Current Population Reports, Series P-57. Estimates of the labor force, agricultural and nonagricultural employment, unemployment, and persons outside the labor force are shown by age and sex. For the employed, estimates of those actually at work at their jobs during the survey week and those with jobs but not at work are published separately. A distribution of hours worked during the survey week is given for those at work. Those with jobs but not at work are classified according to the reason for not working. Duration of unemployment is shown for those seeking work. The regular monthly report is usually issued about three weeks after collection of the data and is either preceded by or issued simultaneously with the Combined Employment and Unemployment Release mentioned earlier.

The regular labor force survey is supplemented by a program of additional inquiries, coordinated with the monthly enumerations,

which is designed to provide more detailed statistics on special problems in order to help qualify and interpret the broad over-all totals published each month. The results of these studies are usually published in Current Population Reports, Series P-50. For example, because of the usefulness of such data in diagnosing economic trends, information is now being obtained each quarter on the characteristics of part-time workers. From these studies, estimates are published on the number and characteristics of those working part time because of slack work, job turnover, unavailability of full-time jobs and other economic factors, as well as those working part time from choice or for various personal reasons. Another important item made available from these quarterly studies is the number of unemployed persons looking for part-time rather than full-time work.

Other supplementary inquiries are used to measure the number of workers holding more than one job and in more than one industry; annual income of persons and families; the size of the group working at any time during the period of a year; the earnings and labor input of farm wage workers during the year; and similar economic phenomena. Through these supplementary inquiries, as well as the detail provided in the monthly statistics, it is possible to regroup various categories of persons in different ways to provide, for example, measures of unemployment or employment under alternative definitions.

#### THE SURVEY DESIGN

The Current Population Survey sample is spread over 230 sample areas comprising 453 counties and independent cities. A total of 24,000 to 26,000 dwelling units and other living quarters are designated for the sample at any time, and completed interviews are obtained each month from about 20,000 to 22,000 households. Of the remainder, about 500 to 1,000 are households 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 2,500 to 3,500 designated units represent those found to be vacant, occupied by persons with residences elsewhere, or otherwise not to be enumerated. The over-all sample size varies over time, partly because of chance but also because of the growth of the population and the creation of new households. Every two to

three years, as the sample expands with population growth, it is necessary to decrease the sampling ratio slightly in order to keep the workload at the average of roughly 25,000 designated units prescribed under the survey budget.

Selection of sample areas.--The entire area of the United States consisting of about 3,000 counties was divided into about 2,000 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 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 230 strata. The 44 largest standard metropolitan areas and certain other SMA'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 1940-1950 decade, percentage nonwhite, principal industry, type of agriculture, and so on. These are the same types of criteria used in the stratification of the old 68-area design instituted in 1943 but recently discontinued, although of course more recent information was used. Except for the 44 largest SMA's and the 16 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 230 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 2,250 is used at the present time (1954). 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 225, achieving the desired ratio of 1 in 2,250 for the stratum.

Within each of the 230 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 225 is used in a sample area, the number of households expected 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 expected number of sample households 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 enu-

meration district, one segment was designated for the sample, with the probability of selection proportionate to the estimated "size" of the segment. Where available advance information indicated that the 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 subsample 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 and relatively up-to-date for most medium-size and large urban centers and show the general outline of each structure within blocks. Where such data 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 immediate field supervisory staff consists of roughly 60 District and Assistant District Supervisors located in 34 centers. During the CPS enumeration period each month, they devote most of their time to control and supervision of the survey, although they have various other assignments during the remainder of the month. They supervise, in total, a staff of about 350 part-time interviewers.

Each month, during the calendar week containing the 15th day, these interviewers contact some responsible person in 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 eighth 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 supplement the basic data. For the employed, information is obtained on hours worked during the survey week, together with a description of the current job, and, for those temporarily away from their jobs, the reason for not working during the survey week. For the unemployed, information is obtained on the length of time they have been looking for work and a description of their last 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 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 2,250 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 the UNIVAC, a high-speed electronic digital computer. The principal steps involved are as given below:

Adjustment for households not interviewed.--The weights for all interviewed house-

holds 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 for certain groups of PSU's and, within these, for each color (white, nonwhite)-residence (urban, rural nonfarm, rural farm) group of households. The proportion of sample households not interviewed is usually about 3 to 5 percent.

Ratio estimates.--The distribution of the population selected for the sample may differ somewhat 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, ratios were developed of the estimated total population by color and residence in a given region based on sample PSU's to the corresponding total population of the region. 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 nonselfrepresenting 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.<sup>1</sup> 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

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<sup>1</sup> See U. S. Bureau of the Census, Current Population Reports, Series P-25, No. 93, April 26, 1954, for a description of the methods used in preparing these independent population estimates.

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 in the survey week (that is, any work besides home housework or other work around the house or volunteer work) 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. Thus, 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. 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 1-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." These are persons who, although not actively looking for work in the specified week, report that they would have been doing so except for (1) their own temporary illness, (2) their belief that no work was available in their line of work or in the community, or (3) because

they were awaiting recall to jobs from which they were on indefinite layoff.

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. Thus, persons who were neither working nor looking for work but who had jobs or businesses from which they were temporarily absent during the survey week were set up as a separate group in the labor force. This group, "persons with jobs but not at work," is added to the "at work" group to derive estimates of the total number of employed persons.

There has been a good deal of discussion over the years concerning two very small components of the "with a job but not at work" group. These are persons who were not at work at their jobs because they are on temporary (less than 30-day) layoff, or because they were scheduled to report to new jobs within 30 days. Because these persons have less definite job attachments than others in the "with a job" category, and because their absence is usually involuntary, many believe they are more properly included with the unemployed. On the other hand, these persons presumably have jobs reserved for them and since they are not looking for other work and are not competing for jobs in the labor market, their status is different from that of persons who are completely jobless.

In any event, separate estimates of these two groups are published each month, and those who wish to regard them as unemployed or in some other class are thus able to do so. Over the past decade these two groups have not been numerically large, usually between 200,000 and 300,000 persons.

The classification as employed of persons working only a few hours in the survey week

has also 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. In addition, the quarterly studies of part-time workers show how many are working short hours because of economic factors and how many are doing so because they are housewives, students, or older persons who 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, war situations, 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 is 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 only a relatively small 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 mail 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 reasonable 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 or various other reasons. 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. 6) 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 (morbidity, 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 due to the fact that only a sample of the population is surveyed. A

measure of response variability indicates the range of difference that may be expected due to 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, 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 will make it possible to provide considerably more detail on this subject in the future than has heretofore been possible.

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 using the information to improve the over-all accuracy of the series.

#### COMPARABILITY WITH RELATED DATA

Household and establishment employment statistics.--Employment data published in "The Monthly Report on the Labor Force" (MRLF) are obtained by direct household interview and differ in some basic respects from related series based on reports from business estab-

lishments 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 but are classified in the job at which they worked the greatest number of hours in the MRLF series.

Second, the MRLF data refer to the week containing the eighth day of the month, whereas the payroll reports may refer to a different period in the month. Series that are subject to marked seasonal fluctuations may show different levels and changes in the two types of statistics because of the difference in timing of the surveys.

Third, only part of the "with a job but not at work" group, included in the MRLF 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 or temporary layoff during the survey week, however, are not on payrolls and would therefore not be counted in establishment statistics.

Finally, the MRLF 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.--The unemployment estimates published by the Bureau of the Census are not directly comparable with figures on unemployment compensation claims, although both series tend to show similar general trends. As in the case of employment data, unemployment figures obtained by household interview relate to the population as a whole. In contrast, large groups of workers are not covered by the unemployment insurance laws and are consequently not eligible for compensation. These groups include government workers, domestic servants, farm workers, the self-employed, and, in some States, employees of small enterprises.

Certain others who are looking for work are excluded from the claims figures because they are disqualified for benefits for various technical or administrative reasons or because they have exhausted their rights to compensation. Also excluded are new entrants in the labor market, who are definitely seeking work but have not been able to build up adequate wage credits through previous employment to entitle them to compensation.

On the other hand, certain persons who are eligible for unemployment insurance and have filed claims may not be classified as unemployed in the MRLF series. These would include some persons on temporary (less than 30-day) layoff from their jobs and some persons involuntarily working only a few hours who are eligible for partial benefits.