

Appendix A

DEFINITIONS AND EXPLANATIONS

Population coverage. The data in this report were collected in conjunction with the November 1976 sample survey which covered the population of the 50 States and the District of Columbia. The figures shown relate to the civilian noninstitutional population.

Geographic regions. The four major regions of the United States, for which data are presented in this report, represent groups of States, as follows:

Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

North Central: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

The North as used in this report includes the combined Northeast and North Central regions.

Geographic divisions. The nine major geographic divisions for which data are shown in this report represent groups of States as follows:

New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Middle Atlantic: New Jersey, New York, and Pennsylvania.

East North Central: Illinois, Indiana, Michigan, Ohio, and Wisconsin.

West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota.

South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia.

East South Central: Alabama, Kentucky, Mississippi, and Tennessee.

West South Central: Arkansas, Louisiana, Oklahoma, and Texas.

Mountain: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

Pacific: Alaska, California, Hawaii, Oregon, Washington.

Metropolitan-nonmetropolitan residence. The population residing in standard metropolitan statistical areas (SMSA's) constitutes the metropolitan population. Except in New England, an SMSA is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more, or "twin cities" with a combined population of at least 50,000. In addition to the county, or counties, containing such a city or cities, contiguous counties are included in an SMSA if, according to certain criteria, they are essentially metropolitan in character and are socially and economically integrated with the central city. In New England SMSA's consist of towns and cities, rather than counties. The metropolitan population in this report is based on SMSA's as defined in the 1970 census and does not include any subsequent additions or changes, other than the recognition of the Nassau-Suffolk, N.Y. SMSA as an area separate from the New York, N.Y. SMSA.

Central cities. Each SMSA must include at least one central city, and the complete title of an SMSA identifies the central city or cities. If only one central city is designated, then it must have 50,000 inhabitants or more. The area title may include, in addition to the largest city, up to two city names on the basis and in the order of the following criteria: (1) The additional city has at least 250,000 inhabitants or (2) the additional city has a population of one-third or more of that of the largest city and a minimum population of 25,000. An exception occurs where two cities have contiguous boundaries and constitute, for economic and social purposes, a single community of at least 50,000, the smaller of which must have a population of at least 15,000.

Farm-nonfarm residence. The farm population refers to rural residents living on farms. The method of determining farm-nonfarm residence in the present survey and in the Current Population Surveys since March 1960 is the same as that used in the 1960 and 1970 censuses but differs from that used in earlier surveys and censuses. Since March 1960 in the Current Population Surveys, farm residence has been determined by the responses to two questions. Owners are asked "Does this place have 10 or more acres?" and renters are asked "Does the place you rent have 10 or more acres?" If the response is "Yes," the respondent is asked "During the past 12 months, did sales of crops, livestock, and other farm products from this place amount to \$50 or more?" If the acreage response is "No," the inquiry relates to sales of \$250 or more. Rural persons in motels and tourist camps

and those living on rented places where no land is used for farming, are not classified as farm population. The nonfarm population, as the term is used here, comprises persons living in urban areas and rural persons not on farms.

Although the method of determining farm-nonfarm residence has not changed since March 1960, the underlying sampling methods and estimation procedures have changed. For a discussion of changes, see **Employment and Earnings**, Volume 18, No. 8, February 1972, pp. 6-9, published by the Bureau of Labor Statistics.

Reported voter participation. Voter participation data for 1976 were derived from replies to the following question asked of all persons of voting age: "This month we have some questions about whether people voted in the November 2d general election. In any election some people are not able to vote because they are sick or busy, or have some other reason, and others do not want to vote. Did (this person) vote in the election held on November 2nd?"

Those of voting age were classified as "voted" or "did not vote." In most tables, this "did not vote" class includes those reported as "did not vote," "do not know if voted," and nonrespondents, but there are exceptions, which are properly noted in the tables where the "did not vote" class includes only those reported as "did not vote." Nonrespondents and persons who reported that they did not know if they voted were included in the "did not vote" class because of the general overreporting by respondents in the sample.

Data shown in this report on voting for President in 1972 were derived from questions asked in 1976. The question referring to 1972 was as follows: "Thinking back to 1972 did (this person) vote in the Presidential election in that year?"

Reason not voted. Data on reported reason for not voting were collected in the Current Population Survey by asking the following question of those persons who reported that they were registered but did not vote: "What was the main reason (this person) did not vote? Was it because (this person) was unable to vote, was not interested, or was there some other reason?"

The answer was recorded in one of the following categories:

Could not vote

What was the main reason (this person) was unable to vote?

- Had no way to get to the polls
- Illness or emergency
- Couldn't take time off from work
- Lines too long, machines not working
- Out of town, or away from home
- Other reason

Not interested

Which sentence best describes why (this person) didn't vote this year?

- Did not prefer any of the candidates
- Politicians are not interested in my problems

- My vote would not make a difference in the election
- Just don't want to get involved in politics
- Not interested in the election this year
- Other reason

Other reason

- What was the main reason (this person) did not vote?
- Just didn't get around to it, or forgot
- Never do
- Other reason
- Don't know

Whether voted in person. Persons who reported that they voted were asked, "Did (this person) vote in person or by absentee ballot?" Responses were recorded as "In person," "Absentee ballot," or "Don't know."

Reported registration. The data shown on registration were obtained by tabulating replies to the following question for those persons included in the category "did not vote." "Was (this person) registered to vote in the November 2nd election?"

All persons reported as having voted were assumed to have been registered. Therefore, the total registered population is obtained by combining the number of persons who voted and persons included in the category "did not vote," but who had registered.

Persons eligible to register. The population of voting age includes a considerable number of persons who meet the age requirement but cannot register and vote. Only citizens are eligible to vote. Among citizens of voting age, some persons are not permitted to vote because they have been committed to penal institutions, mental hospitals, or other institutions, or because they fail to meet State and local resident requirements for various reasons. The eligibility to register is governed by State laws which differ in many respects.

Registration is the act of qualifying to vote by formally enrolling on a list of voters. With certain exceptions, such as for members of the Armed Forces and a few States which permit registration by mail, registration must be done in person. For the majority of States, registration is permanent, that is, once a person has enrolled as a voter his or her name remains on the list as long as he or she continues to vote in the same jurisdiction—usually at least once every two or four years. In a few States or parts of States, voters must register for each election in which they desire to vote. People who have moved to another election district must take steps to have their names placed on the voting rolls in their new place of residence.

In a few States or parts of States, no formal registration is required. Voters merely present themselves at the polling place on election day with proof that they are of age and have met the appropriate residence requirements. Therefore, in these areas persons who are citizens and of voting age, and who meet the residence requirements, would be considered as being registered.

Reason not registered. Data on reported reason for not registering to vote were collected in the Current Population Survey by asking the following question of those persons who reported that they had not registered to vote: "What was the main reason (this person) did not register? Was it because (this person) was unable to register, was not interested, or was there some other reason?"

Unable to register

What was the main reason (this person) was unable to register?

Not a United States citizen

Had not lived here long enough to be qualified to vote

Recently moved here, haven't had time

Permanent illness or disability

No transportation

Hours or place of registration inconvenient

Didn't know how or where to register

Can't read English

Other reason

Not interested

Which sentence best describes why (this person) did not register this year?

Did not prefer any of the candidates

Politicians are not interested in my problems

My vote would not make a difference in the election

Just don't want to get involved in politics

Not interested in the election this year

Other reason

Other reason

What was the main reason (this person) did not register?

Just didn't get around to it, or forgot

Didn't know I had to

Never do

Other reason

Don't know

Duration of residence. Data on duration of residence were obtained from replies to the following question: "How long has (this person) lived at this address?" The answer was recorded in one of the following categories:

Less than 1 month

1 to 6 months

7 to 11 months

1 to 2 years

3 to 5 years

6 to 9 years

10 years or more

Age. The age classification is based on the age of the person at the person's last birthday.

Race. The population is divided into three groups on the basis of race: White, Black, and "other races." The last category includes Indians, Japanese, Chinese, and any other race except White and Black. In this report, "other races" are usually shown in combination with the Black population.

Persons of Spanish origin. Persons of Spanish origin in this report were determined on the basis of a question that

asked for self-identification of the person's origin or descent. Respondents were asked to select their origin (or the origin of some other household member) from a "flash card" listing ethnic origins. Persons of Spanish origin, in particular, were those who indicated that their origin was Mexican, Puerto Rican, Cuban, Central or South American, or some other Spanish origin.

Household. A household includes all of the persons who occupy a house, an apartment, or other group of rooms, or a room which constitutes a housing unit under the 1970 census rules. A group of rooms or a single room is regarded as a housing unit when it is occupied as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure, and when there is either (1) direct access from the outside or through a common hall, or (2) a kitchen or cooking equipment for the exclusive use of the occupants.

Family. The term "family," as used here, refers to a group of two persons or more related by blood, marriage, or adoption, and residing together; all such persons are considered as members of one family.

Primary family. The term "primary family" refers to the head of a household and all other persons in the household related to the head by blood, marriage, or adoption.

Marital status. The marital status classification identifies four major categories: single, married, widowed, and divorced. These terms refer to the marital status at the time of the enumeration.

The category "married" is further divided into "married, spouse present," "separated," and "other married, spouse absent." A person was classified as "married, spouse present" if the husband or wife was reported as a member of the household, even though he or she may have been temporarily absent on business or on vacation, visiting, in a hospital, etc., at the time of the enumeration. Persons reported as separated included those with legal separations, those living apart with intentions of obtaining a divorce, and other persons permanently or temporarily separated because of marital discord. The group "other married, spouse absent" includes married persons living apart because either the husband or wife was employed, and living at a considerable distance from home, was serving away from home in the Armed Forces, had moved to another area, or had a different place of residence for any other reason except separation as defined above.

Married couple. A married couple, as defined for census purposes, is a husband and his wife enumerated as members of the same household. The married couple may or may not have children living with them. The expression "husband-wife" before the term "household," "family," or "subfamily" indicates that the household, family, or subfamily is maintained by a husband and wife. Tables which display data for characteristics of the head (e.g., age, sex, race) for households or families show characteristics of the husband in husband-wife households or families.

Head of household or family. According to current terminology used by the Bureau of the Census, one person in each household, family, or subfamily is designated as the "head." The number of such persons, therefore, is equal to the number of households, families, or subfamilies. This person is usually the person regarded as the head by the members of the group. Married women are not classified thus, if their husbands are living with them at the time of the survey.

The use of the term "head" in Census Bureau enumerations and publications has been criticized by a number of individuals and groups as being offensive, because of its hierarchical connotations, and not descriptive of the responsibility-sharing roles of members of households and families. Historically, the Bureau has primarily used the term "head" as a convenient way of determining relationships within households and families and of defining households and families by the characteristics of a single household member in data tables. These practices are currently being reviewed and efforts are underway to develop a suitable alternative which would be inoffensive and yet allow for the collection and publication of data on household and family characteristics on a basis which would keep the adverse effects on time-series comparisons to a minimum.

Unrelated individuals. Unrelated individuals are persons (other than inmates of institutions) who are not living with any relatives. An unrelated individual may be (1) a person living alone or with nonrelatives only, (2) a lodger or resident employee with no relatives in the household, or (3) a group quarters member who has no relatives living with him. Thus, a widow who occupies her house alone or with one or more other persons not related to her, a roomer not related to anyone else in the housing unit, a maid living as a member of her employer's household but with no relatives in the household, and a resident staff member in a hospital living apart from any relatives are all examples of unrelated individuals.

Years of school completed. In this report, data on years of school completed were derived from the combination of answers to two questions, (a) "What is the highest grade of school that the person has attended?" and (b) "Did the person finish this grade?"

The questions on educational attainment applied only to progress in "regular" schools. Such schools include public, private, and parochial elementary and high schools (both junior and senior high), colleges, universities, and professional schools, whether day schools or night schools. Thus, "regular" schooling is that which advances a person toward an elementary or high school diploma, or a college, university, or professional school degree. Schooling in other than regular schools was counted only if the credits obtained were regarded as transferable to a school in the regular school system.

Labor force and employment status. The definitions of labor force and employment status in this report relate to the population 14 years old and over.

Employed. Employed persons comprise (1) all civilians 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 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 personal reasons, whether or not they were paid by their employers for time off, and whether or not they were seeking other jobs. Excluded from the employed group are persons whose only activity consisted of work around the house (such as own home housework, painting or repairing own home, etc.) or volunteer work for religious, charitable, and similar organizations.

Unemployed. Unemployed persons are those civilians who, during the survey week, had no employment but were available for work and (1) had engaged in any specific jobseeking activity within the past 4 weeks, such as registering at a public or private employment office, meeting with prospective employers, checking with friends or relatives, placing or answering advertisements, writing letters of application, or being on a union or professional register; (2) were waiting to be called back to a job from which they had been laid off; or (3) were waiting to report to a new wage or salary job within 30 days.

Labor force. Persons are classified as in the labor force if they were employed as civilians, unemployed, or in the Armed Forces during the survey week. The "civilian labor force" is comprised of all civilians classified as employed or unemployed.

Not in the labor force. All civilians who are not classified as employed or unemployed are defined as "not in the labor force." This group who are neither employed nor seeking work includes persons engaged only in own home housework, attending school, or unable to work because of long-term physical or mental illness; persons who are retired or too old to work, seasonal workers for whom the survey week fell in an off season, and the voluntary idle. Persons doing only unpaid family work (less than 15 hours) are also classified as not in the labor force.

Occupation and class of worker. The data on occupation of employed persons refer to the civilian job held during the survey week. Persons employed at two or more jobs were reported in the job at which they worked the greatest number of hours during the week.

The occupation groupings used here are mainly the major groups used in the 1970 Census of Population. The composition of these groups is shown in Volume 1, **Characteristics of the Population, Part 1, United States Summary**, chapter D. The categories used are either detailed classifications or combinations thereof.

The class-of-worker classification specifies "wage and salary workers" and "self-employed workers." Wage and salary workers received wages, salary, commissions, tips, pay in kind, or piece rates from a private employer or from a government unit. Self-employed workers have their own business, profession, or trade, or operate a farm for profit or fees. The self-employed include unpaid family workers.

Family income. Income as defined in this report represents the combined total money income of the family before deductions for personal taxes, Social Security, bonds, etc. It is the algebraic sum of money wages and salaries, net income from self-employment, and income other than earnings received by all family members during the 12 months prior to the November 1976 survey. It should be noted that, although the family income statistics refer to receipts during the previous 12 months, the characteristics of the person, such as age, labor force status, etc., and the composition of families refer to the date of the survey.

The income tables include in the lowest income group (under \$5,000) those who were classified as having no income in the preceding 12 months and those reporting a loss in net income from farm and nonfarm self-employment or in rental income. Many of these were living on income "in kind," savings, or gifts; or were newly constituted families, or families in which the sole breadwinner had recently died or had left the household. However, many of the families who reported no income probably had some money income which was not recorded in the survey.

The income tables in this report includes a separate category for families for whom no income information was obtained. In most of the other Current Population Survey reports showing income data, the missing income data have been allocated.

The money income level of families shown in this report may be somewhat understated. Income data from the November control card are based on the respondent's estimate of total family money income for the preceding 12 months coded in broad, fixed income intervals. Income data collected in the March supplement to the Current Population Survey are based on responses to 8 direct questions asked for all persons 14 years old and over identifying 14 different sources of income and cover the preceding calendar year.

Previous research has shown that the use of broad income intervals to record money income tends to reduce the rate of nonreporting while increasing the likelihood that the amounts reported will be significantly understated as compared with results from more detailed questions.

Symbols. A dash "-" represents zero, and the symbol "Z" indicates that the figure is less than 0.05 percent. The symbol "B" means that the base for the derived figure is less than 75,000. Three dots "..." means not applicable, and "NA" means not available.

Rounding of estimates. Individual figures are rounded to the nearest thousand without being adjusted to group totals, which are independently rounded; with few exceptions, percentages are based on the unrounded numbers.

SOURCE AND RELIABILITY OF THE ESTIMATES

Source of data. Most of the estimates in this report are based on data collected in November of 1964, 1972, and 1976 from the Current Population Survey. Also included in text table G are counts of official votes cast during the November elections of these years.

Current Population Survey (CPS). The monthly CPS deals mainly with labor force data for the civilian, noninstitutional population. Questions relating to labor force participation are asked about each member 14 years old and older in each sample household. In addition, supplemental questions are asked about voting and voter registration during the month of November in election years.

The present CPS sample was initially selected from the 1970 census file and is updated continuously to reflect new construction where possible (see section, "Nonsampling Variability," below). Previous sample designs used, as a basis, files from the census most recently completed at the time.

The following table provides a description of some aspects of the CPS sample designs in use during the referenced data-collection periods.

Description of the Current Population Survey

Time period	Number of sample areas ¹	Households eligible		Households visited, not eligible ²
		Interviewed	Not interviewed	
November 1976.....	461	45,000	2,000	8,000
November 1972.....	461	45,000	2,000	8,000
November 1964.....	357	33,500	1,500	6,000

¹These areas were chosen to provide coverage in each State and the District of Columbia.

²These are households which were visited but were found to be vacant or otherwise not eligible for interview.

The estimation procedure used for the monthly CPS data involves the inflation of weighted sample results to independent estimates of the civilian noninstitutional population of the United States by age, race, and sex. These independent estimates are based on statistics from decennial censuses; statistics on births, deaths, immigration, and emigration; and statistics on the strength of the Armed Forces.

Reliability of the estimates. Since the estimates in this report are based on a sample, they may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaires, instructions, and enumerators. There are two types of errors possible in an estimate based on a sample survey—sampling and nonsampling. The standard errors provided for this report primarily indicate the magnitude of the sampling error. They also partially measure the effect of some nonsampling errors in response and enumeration, but do not measure any systematic biases in the data. The full extent of nonsampling error is unknown. Consequently, particular care should be exercised in the interpretation of figures based on a relatively small number of cases or on small differences between estimates.

Nonsampling variability. As in any survey work, the results are subject to errors of response and nonreporting in addition to sampling variability. Nonsampling errors can be attributed to many sources, e.g., inability to obtain information about all cases in the sample, definitional difficulties, differences in the interpretation of questions, inability or unwillingness to provide correct information on the part of respondents, inability to recall information, mistakes made in collection such as in recording or coding the data, mistakes made in processing the data, mistakes made in estimating values for missing data, and failure to represent all units with the sample (undercoverage).

Undercoverage in the CPS results from missed housing units and missed persons within sample households. Overall undercoverage, as compared to the level of the decennial census, is about 5 percent. It is known that CPS undercoverage varies with age, sex, and race. Generally, undercoverage is larger for males than for females and larger for Blacks and other races than for Whites. Ratio estimation to independent age-sex-race population controls, as described previously, partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have different characteristics than interviewed persons in the same age-sex-race group. Further, the independent population controls used have not been adjusted for undercoverage in the 1970 census, which was estimated at 2.5 percent of the population with similar undercoverage differentials by age, sex, and race as observed in CPS.

The approximate magnitude of two sources of undercoverage of housing units is known. Of the 83,000,000 housing units in the U.S. about 600,000 new construction housing units other than mobile homes are not represented in the CPS sample because they were assigned building permits

prior to the 1970 census, but building was not completed by the time of the census, (i.e., April 1970). Most conventional new construction, for which building permits were issued after the census, is represented. About 290,000 occupied mobile homes are not represented in CPS; these units were either missed in the census or have been built or occupied since the census. The extent of other sources of undercoverage of housing units is unknown but believed to be small. These estimates of missed units are relevant to the present sample only and not to earlier designs where the extent of undercoverage was generally less. Further sources of CPS nonsampling error peculiar to questions on voting and voter registration are discussed in the section, "Evaluation of the Accuracy of the Data."

Sampling variability. The standard errors given in the tables are primarily measures of sampling variability, that is, of the variations that occur by chance because a sample rather than the whole of the population is surveyed. The chances are about 68 out of 100 that an estimate from the survey differs from a complete census figure by less than the standard error. The chances are about 90 out of 100 that this difference would be less than 1.6 times the standard error and about 95 out of 100 that the difference would be less than twice the standard error.

All statements of comparison appearing in the text are significant at a 1.6 standard error level or better, and most are significant at a level of more than 2.0 standard errors. This means that for most differences cited in the text, the estimated difference is greater than twice the standard error of the difference. Statements of comparison qualified in some way (e.g., by the phrase, "some evidence") have a level of significance between 1.6 and 2.0 standard errors.

Standard errors for data based on official counts. The standard error associated with official counts may be assumed to be zero.

Note when using small estimates. Percent distributions are shown in the report only when the base is 75,000 or greater. Because of the large standard errors involved, there is little chance that percentages would reveal useful information when computed on a smaller base. Estimated numbers are shown, however, even though the relative standard errors of these numbers are larger than those for corresponding percentages. These smaller estimates are provided primarily to permit such combinations of the categories as serve each user's needs.

Standard error tables and their use. In order to derive standard errors that would be applicable to a large number of estimates and could be prepared at a moderate cost, a number of approximations were required. Therefore, instead of providing a standard error for each estimate, generalized sets of standard errors are provided for various types of characteristics. As a result, the sets of standard errors provided give an indication of the order of magnitude of the standard error of an estimate rather than the precise standard error.

The figures presented in tables A-1 and A-4 provide approximations to standard errors of various estimates for total or White persons; tables A-2 and A-5 provide approximations to standard errors of estimates for Black persons; and tables A-3 and A-6 provide approximations to standard errors for estimates involving residence or regions. Estimated standard errors cannot be obtained from tables A-1 through A-6 without the use of the appropriate factors in tables A-7 or A-8. These factors must be applied to the generalized standard errors in order to adjust for the combined effect of sample design and the estimating procedure on the value of the characteristic. The standard error tables with which each factor should be used are indicated in tables A-7 and A-8. Standard errors for intermediate values not shown in the generalized tables of standard errors may be approximated by interpolation.

Two parameters are used (denoted "a" and "b") to calculate standard errors for each type of characteristic; they are presented in tables A-7 and A-8. These parameters were used to calculate the standard errors in tables A-1 through A-6 and the factors in tables A-7 and A-8. They also may be used to calculate the standard errors for estimated numbers and estimated percentages directly. Direct computation of the standard errors will give more accurate results than the use of the standard error tables and the factors in tables A-7 or A-8. Methods for direct computation are given in the following sections.

Standard errors of estimated numbers. The approximate standard error, σ_x , of an estimated number shown in this report can be obtained in two ways. It may be obtained by use of the formula

$$\sigma_x = f\sigma \tag{1}$$

where f is the appropriate factor from table A-7 or A-8, and σ is the standard error on the estimate obtained by interpolation from table A-1, A-2, or A-3. Alternately, standard errors may be approximated by the following formula (2), from which the standard errors were calculated in tables A-1, A-2, and A-3. Use of this formula will provide more accurate results than the use of formula (1) above.

$$\sigma_x = \sqrt{ax^2 + bx} \tag{2}$$

Here x is the size of the estimate and a and b are the parameters in table A-7 or A-8 associated with the particular type of characteristic.

Standard errors of estimated percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on both the size of the percentage and the size of the total upon which this percentage is based. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are 50 percent or more. When the numerator and denomina-

tor of the percentage are in different categories, use the factor or parameters indicated by the numerator. The approximate standard error, $\sigma_{(x,p)}$, of an estimated percentage can be obtained by use of the formula

$$\sigma_{(x,p)} = f\sigma \tag{3}$$

In this formula f is the appropriate factor from table A-7 or A-8 and σ is the standard error on the estimate from table A-4, A-5, or A-6. Alternately, standard errors may be approximated by the following formula (4) from which the standard errors in tables A-4, A-5, and A-6 were calculated; direct computation will give more accurate results than use of the standard error tables and the factors.

$$\sigma_{(x,p)} = \sqrt{\frac{b}{x} \cdot p(100 - p)} \tag{4}$$

Here x is the size of the subclass of persons which is the base of the percentage, p is the percentage ($0 \leq p \leq 100$), and b is the parameter in table A-7 or A-8 associated with the particular type of characteristic in the numerator of the percentage.

Illustration of use of standard error tables. Table 8 of this report shows that 12,755,000 never-married persons voted in the election of November 1976. Table A-1 shows the approximate standard error of an estimate of this size is 165,000. The appropriate factor to apply from table A-7 is 1.2 so the standard error is approximately $1.2 \times 165,000 = 198,000$. The chances are 68 out of 100 that the estimate would have been a figure differing from a complete census figure by less than 198,000. The chances are 95 out of 100 that the estimate would have differed from a complete census figure by less than 396,000 (twice the standard error). Alternately, using formula (2) with parameters $a = 0.000017$ and $b = 3500$ gives an estimate of the standard error of 205,000.

Of these 12,755,000 never-married persons who voted, 6,174,000, or 48.4 percent, were female. From table A-7 the appropriate b parameter for computing standard errors is 3500; using formula (4), the standard error on an estimate of 48.4 percent is

$$\sqrt{\frac{3500}{12,755,000} 48.4(100 - 48.4)} \doteq 0.8 \text{ percent}$$

Consequently, chances are 68 out of 100 that the estimated 48.4 percent would be within 0.8 percentage points of a complete census figure. Chances are 95 out of 100 that the estimate would be within 1.6 percentage points of a complete census figure; i.e., the 95 percent confidence interval would be from 46.8 to 50.0 percent. As an alternative, tables A-4 and A-7 can be used to get an estimated standard error of $1.2 \times 0.74 = 0.9$ percent on the estimate of 48.4 percent.

Table A-1. Standard Errors of Estimated Numbers of Persons 18 Years Old or Older

Total or White

(68 chances out of 100. Numbers in thousands)

Estimate	Standard error	Estimate	Standard error
5.....	4	2,500.....	79
25.....	8	5,000.....	110
50.....	11	7,500.....	133
75.....	14	10,000.....	152
100.....	16	25,000.....	223
250.....	25	50,000.....	271
500.....	35	75,000.....	266
750.....	43	100,000.....	204
1,000.....	50	110,000.....	151

Table A-2. Standard Errors of Estimated Numbers of Persons 18 Years Old or Older

Black

(68 chances out of 100. Numbers in thousands)

Estimate	Standard error	Estimate	Standard error
1.....	2	500.....	42
5.....	4	750.....	51
25.....	10	1,000.....	58
50.....	14	2,500.....	86
75.....	17	5,000.....	106
100.....	19	7,500.....	107
250.....	30	10,000.....	89

Table A-3. Standard Errors of Estimated Numbers of Persons 18 Years Old or Older for Regions or Residence Data

(68 chances out of 100. Numbers in thousands)

Estimate	Standard error	Estimate	Standard error
1.....	2	1,000.....	79
5.....	6	2,500.....	124
25.....	12	5,000.....	173
50.....	18	7,500.....	209
75.....	22	10,000.....	239
100.....	25	25,000.....	351
250.....	39	50,000.....	427
500.....	56	75,000.....	419
750.....	68	100,000.....	323

**Table A-4. Standard Errors of Estimated Percentages of Persons 18 Years Old or Older
Total or White**

(68 chances out of 100)

Base of percentage (thousands)	Estimated percentage					
	2 or 98	5 or 95	10 or 90	20 or 80	25 or 75	50
50.....	3.1	4.9	6.7	9.0	9.7	11.2
100.....	2.2	3.5	4.8	6.3	6.9	7.9
250.....	1.4	2.2	3.0	4.0	4.3	5.0
500.....	1.0	1.5	2.1	2.8	3.1	3.5
1,000.....	0.7	1.1	1.5	2.0	2.2	2.5
5,000.....	0.3	0.5	0.7	0.9	1.0	1.1
10,000.....	0.2	0.3	0.5	0.6	0.7	0.8
25,000.....	0.14	0.2	0.3	0.4	0.4	0.5
50,000.....	0.10	0.15	0.2	0.3	0.3	0.4
100,000.....	0.07	0.11	0.15	0.2	0.2	0.3
150,000.....	0.06	0.09	0.12	0.2	0.2	0.2

**Table A-5. Standard Errors of Estimated Percentages of Persons 18 Years Old or Older
Black**

(68 chances out of 100)

Base of percentage (thousands)	Estimated percentage					
	2 or 98	5 or 95	10 or 90	20 or 80	25 or 75	50
50.....	3.8	5.9	8.1	10.9	11.8	13.6
100.....	2.7	4.2	5.8	7.7	8.3	9.6
250.....	1.7	2.6	3.6	4.9	5.3	6.1
500.....	1.2	1.9	2.6	3.4	3.7	4.3
750.....	1.0	1.5	2.1	2.8	3.0	3.5
1,000.....	0.8	1.3	1.8	2.4	2.6	3.0
2,500.....	0.5	0.8	1.2	1.5	1.7	1.9
5,000.....	0.4	0.6	0.8	1.1	1.2	1.4
10,000.....	0.3	0.4	0.6	0.8	0.8	1.0
25,000.....	0.2	0.3	0.4	0.5	0.5	0.6

Table A-6. Standard Errors of Estimated Percentages of Persons 18 years Old or Older for Regions or Residence Data

(68 chances out of 100)

Base of percentage (thousands)	Estimated percentage					
	2 or 98	5 or 95	10 or 90	20 or 80	25 or 75	50
50.....	4.9	7.7	10.6	14.1	15.3	17.7
100.....	3.5	5.4	7.5	10.0	10.8	12.5
250.....	2.2	3.4	4.7	6.3	6.8	7.9
500.....	1.6	2.4	3.4	4.5	4.8	5.6
1,000.....	1.1	1.7	2.4	3.2	3.4	4.0
5,000.....	0.5	0.8	1.1	1.4	1.5	1.8
10,000.....	0.3	0.5	0.7	1.0	1.1	1.2
25,000.....	0.2	0.3	0.5	0.6	0.7	0.8
50,000.....	0.2	0.2	0.3	0.4	0.5	0.6
100,000.....	0.11	0.2	0.2	0.3	0.3	0.4

Table A-7. Factors to be Applied to Tables A-1 Through A-6 and Parameters for Various Characteristics

(For meaning of symbols, see text)

Characteristics	Total or white			Black			Spanish origin		
	a	b	f ¹	a	b	f ²	a	b	f ¹
Voting:									
CPS ³	-0.000021	2,518	1.0	-0.000289	3,686	1.0	-0.000043	7,469	1.7
Official.....	-	-	-	-	-	-	-	-	-
Residence:									
Region, Census Division, Metropolitan/nonmetro- politan, Farm/nonfarm, 30 largest SMSA's ⁴	-0.000052	6,242	1.0	-0.000052	6,242	1.0	-0.000075	15,028	1.6
Marital status.....	-0.000017	3,500	1.2	...	...	...	...	...	...
Education of persons ³	-0.000016	2,064	0.9	-0.000186	2,792	0.9	-0.000025	3,851	1.2
Education of family head.....	-0.000010	1,389	0.7	-0.000087	1,255	0.6	...	...	...
Employment, not in labor force, occupation ³	-0.000016	2,078	0.9	-0.000133	2,078	0.8	...	...	...
Unemployment.....	-0.000015	1,971	0.9	-0.000139	2,265	0.8	...	...	...
Family income.....	-0.000014	3,067	1.1	-0.000104	2,770	0.9	...	...	...
Household relationship:									
Head, wife of head.....	-0.000010	1,389	0.7	-0.000087	1,255	0.6	...	...	...
Nonrelative or other relative of head.....	-0.000017	3,500	1.2	-0.000020	5,020	1.2	...	...	...

¹Factors in this column (except for residence entry) should be applied only to tables A-1 and A-4.²Factors in this column (except for residence entry) should be applied only to tables A-2 and A-5.³For 1964 data multiply parameters by 1.5 and factors by 1.2.⁴Factors in this row should be applied only to tables A-3 and A-6.**Table A-8. Factors to be Applied to Tables A-3 and A-6 and Parameters for the 25 Largest States**

State	a	b	f
California.....	-0.000083	12,846	1.4
New York.....	-0.000069	10,694	1.3
Pennsylvania.....	-0.000075	11,614	1.4
Texas.....	-0.000103	15,823	1.6
Illinois.....	-0.000105	16,180	1.6
Ohio.....	-0.000080	12,348	1.4
Michigan.....	-0.000154	23,704	1.9
Florida.....	-0.000071	10,915	1.3
New Jersey.....	-0.000074	11,324	1.3
Massachusetts.....	-0.000050	7,640	1.1
North Carolina.....	-0.000190	29,229	2.2
Indiana.....	-0.000139	21,460	1.9
Virginia.....	-0.000148	22,759	1.9
Georgia.....	-0.000169	25,997	2.0
Missouri.....	-0.000122	18,790	1.7
Wisconsin.....	-0.000197	30,342	2.2
Tennessee.....	-0.000210	32,412	2.3
Maryland.....	-0.000102	15,736	1.6
Alabama.....	-0.000311	47,935	2.8
Minnesota.....	-0.000233	35,868	2.4
Louisiana.....	-0.000191	29,390	2.2
Kentucky.....	-0.000206	31,661	2.3
Washington.....	-0.000188	28,976	2.2
Connecticut.....	-0.000058	8,994	1.2
Iowa.....	-0.000223	34,304	2.3

Table A-9. Estimates of Population in Race, Sex, Age, Education, and Occupation Groups: November 1964 to 1976

(In thousands. See text for meaning of symbols)

Race, sex, age, education and occupation	1976	1972	1968	1964
All races.....	146,548	136,203	116,535	110,604
White.....	129,316	121,243	104,521	99,353
Black.....	14,927	13,493	10,935	10,340
Spanish origin ¹	6,594	5,616	(NA)	(NA)
Both sexes.....	146,548	136,203	116,535	110,604
18 to 20 years.....	12,105	11,022	432	296
21 to 24 years.....	14,848	13,590	11,170	9,623
25 to 34 years.....	31,533	26,933	23,198	21,381
35 to 44 years.....	22,769	22,240	22,905	23,915
45 to 54 years.....	23,326	23,375	22,632	21,564
55 to 64 years.....	19,967	18,969	17,730	16,557
65 to 74 years.....	13,974	12,608	11,573	11,300
75 years and over.....	8,027	7,466	6,895	5,969
Male.....	68,957	63,833	54,464	52,123
18 to 20 years.....	5,848	5,291	207	132
21 to 24 years.....	7,180	6,434	5,015	4,404
25 to 34 years.....	15,295	12,991	11,083	10,152
35 to 44 years.....	10,936	10,679	10,979	11,456
45 to 54 years.....	11,239	11,195	10,860	10,448
55 to 64 years.....	9,418	8,896	8,383	7,922
65 to 74 years.....	6,061	5,470	5,122	5,058
75 years and over.....	2,981	2,878	2,815	2,549
Female.....	77,591	72,370	62,071	58,482
18 to 20 years.....	6,257	5,731	225	164
21 to 24 years.....	7,668	7,156	6,155	5,218
25 to 34 years.....	16,237	13,943	12,114	11,228
35 to 44 years.....	11,833	1,560	11,926	12,460
45 to 54 years.....	12,087	12,180	11,772	11,116
55 to 64 years.....	10,550	10,073	9,348	8,635
65 to 74 years.....	7,913	7,138	6,451	6,242
75 years and over.....	5,046	4,588	4,080	3,420
All educational levels.....	146,548	136,203	116,535	² 110,309
Elementary: 0 to 7 years.....	12,920	14,379	15,613	15,681
8 years.....	12,027	13,686	14,817	15,401
High school: 1 to 3 years.....	22,216	22,277	20,429	19,359
4 years.....	55,665	50,749	39,704	34,872
College: 1 to 3 years.....	23,561	19,254	13,312	10,426
4 years or more.....	20,158	15,859	12,659	10,271
Not reported.....	-	-	-	4,298
Total employed.....	86,034	80,164	70,002	² 64,285
White-collar workers.....	44,116	39,382	33,709	29,207
Blue-collar workers.....	28,503	27,924	25,229	23,849
Service workers.....	10,931	10,039	8,078	7,562
Farm workers.....	2,485	2,819	2,987	3,668

¹Persons of Spanish origin may be of any race.²Persons 21 years old and over.

Standard error of a difference. For a difference between two sample estimates, the standard error is approximately equal to

$$\sigma_{(x-y)} \doteq \sqrt{\sigma_x^2 + \sigma_y^2} \quad (5)$$

where σ_x and σ_y are the standard errors of the estimates x and y ; the estimates can be of numbers, percents, averages, etc. This will represent the actual standard error quite accurately for the difference between two estimates of the same characteristic in two different areas, or for the difference between two separate and uncorrelated characteristics in the same area. If, however, there is a high positive correlation between the two characteristics, the formula will overestimate the true standard error.

Illustration of the computation of the standard error of a difference. Table 2 of this report shows that in the November 1976 election there were 3,649,000 Black voters in the South and 1,692,000 Black voters in the North Central U.S. for an estimated difference of 1,957,000 voters between the two regions.

Using formula (2) and the appropriate parameters from table A-7, the standard error on the estimate of 3,649,000 voters is approximately 149,000. Similarly, the approximate standard error on the estimate of 1,692,000 voters is 102,000. Therefore, from formula (5) the approximate standard error on the estimated difference of 1,957,000 persons is

$$181,000 \doteq \sqrt{(149,000)^2 + (102,000)^2}$$

This means the chances are 68 out of 100 that the estimated difference based on the sample estimates would vary from the difference derived using complete census figures by less than 181,000 persons. The 68 percent confidence interval about the 1,957,000 persons difference is from 1,776,000 to 2,138,000, i.e., $1,957,000 \pm 181,000$. A conclusion that the average estimate of the difference derived from all possible samples of the same size and design lies within a range computed in this way would be correct for roughly 68 percent of all possible samples. The 95 percent confidence interval is 1,595,000 to 2,319,000. Since this interval does not include zero, we can conclude with 95 percent confidence that there was a significant difference in the numbers of Black voters in the South and in the North Central U.S. in November 1976.