Appendix C. Source and Accuracy of Estimates

SOURCE OF DATA

Most estimates in this report come from data obtained in October 1992 from the Current Population Survey (CPS). Some estimates are based on data obtained from the CPS in earlier years. The Bureau of the Census conducts the survey every month, although this report uses only October data for its estimates. The October survey uses two sets of questions, the basic CPS and the supplement.

Basic CPS. The basic CPS collects primarily labor force data about the civilian noninstitutional population. Interviewers ask questions concerning labor force participation about each member 15 years old and over in every sample household.

The present CPS sample was selected from the 1980 Decennial Census files with coverage in all 50 States and the District of Columbia. The sample is continually updated to account for new residential construction. It is located in 729 areas comprising 1,973 counties, independent cities, and minor civil divisions. About 60,000 occupied households are eligible for interview every month. Interviewers are unable to obtain interviews at about 2,600 of these units because the occupants are not found at home after repeated calls or are unavailable for some other reason.

Since the introduction of the CPS, the Bureau of the Census has redesigned the CPS sample several times to improve the quality and reliability of the data and to satisfy changing data needs. The most recent changes were completely implemented in July 1985.

Table C-1 summarizes changes in the CPS designs for the years for which data appear in this report.

October Supplement. In addition to the basic CPS questions, interviewers asked supplementary questions in October about school enrollment for all household members 3 years old and over.

Estimation Procedure. This survey's estimation procedure inflates weighted sample results to independent estimates of the civilian noninstitutional population of the United States by age, sex, race, and Hispanic/non-Hispanic categories. The independent estimates were based on statistics from decennial censuses of population; statistics on births, deaths, immigration and emigration; and statistics on the size of the Armed Forces.

Table C-1. **Description of the Current Population Survey**

Time Period	Number of sample areas	Housing units eligible	
		Interviewed	Not Interviewed
1990 to 1992	729	57,400	2,600
1988 to 1989	729	53,600	2,500
1985 to 1987	729	57,000	2,500
1984	629/729[1]	57,000	2,500
1981 to 1983	629	59,000	2,500
1980	629	65,500	3,000
1978 to 1979	614	55,000	3,000
1972 to 1977	461	46,500	2,500
1971	449	45,000	2,000
1967 to 1970	449	48,000	2,000
1963 to 1966	357	33,500	1,500
1960 to 1962	333	33,500	1,500
1957 to 1959	330	33,500	1,500
1954 to 1956	230	21,000	500-1,000
1947 to 1953	68	21,000	500-1,000

[1]The CPS was redesigned following the 1980 Decennial Census of Population and Housing. During phase-in of the new design, housing units from the new and old designs were in the sample.

The independent population estimates used for 1981 to present were based on updates to controls established by the 1980 Decennial Census. Before 1981, independent population estimates from the most recent decennial census were used. For more details on the change in independent estimates, see the section entitled "Introduction of 1980 Census Population Controls" in an earlier report (Series P60, No. 133).

The estimates in this report for 1985 and later also employ a revised survey weighting procedure for persons of Hispanic origin. In previous years, weighted sample results were inflated to independent estimates of the noninstitutional population by age, sex, and race. There was no specific control of the survey estimates for the Hispanic population. Since then, the Bureau of the Census developed independent population controls for the Hispanic population by sex and detailed age groups. Revised weighting procedures incorporate these new controls. The independent population estimates include some, but not all, undocumented immigrants.

ACCURACY OF THE ESTIMATES

Since the CPS estimates come from a sample, they may differ from figures from a complete census using the same questionnaires, instructions, and enumerators. A sample survey estimate has two possible types

of errors: sampling and nonsampling. The accuracy of an estimate depends on both types of errors, but the full extent of the nonsampling error is unknown. Consequently, one should be particularly careful when interpreting results based on a relatively small number of cases or on small differences between estimates. The standard errors for CPS estimates primarily indicate the magnitude of sampling error. They also partially measure the effect of some nonsampling errors in responses and enumeration, but do not measure systematic biases in the data. (Bias is the average over all possible samples of the differences between the sample estimates and the desired value.)

Nonsampling Variability. There are several sources of nonsampling errors including the following:

- Inabililty to get information about all sample cases.
- Definitional difficulties.
- Differences in interpretation of questions.
- Respondents' inability or unwillingness to provide correct information.
- Respondents' inability to recall information.
- Errors made in data collection, such as recording and coding data.
- Errors made in processing the data.
- Errors made in estimating values for missing data.
- Failure to represent all units with the sample (undercoverage).

CPS undercoverage results from missed housing units and missed persons within sample households. Compared with the level of the 1980 Decennial Census, overall CPS undercoverage is about 7 percent. CPS undercoverage varies with age, sex, and race. Generally, undercoverage is larger for males than for females and larger for Blacks and other races combined than for Whites. As described previously, ratio estimation to independent age-sex-race-Hispanic population controls partially corrects for the bias due to 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 from those of interviewed persons in the same age-sex-race-Hispanic group. Furthermore, the independent population controls have not been adjusted for undercoverage in the 1980 census.

A common measure of survey coverage is the coverage ratio, the estimated population before ratio adjustment divided by the independent population control. Table C-2 shows CPS coverage ratios for age-sex-race groups for a recent month. The CPS coverage ratios can exhibit some variability from month to month, but these are a typical set of coverage ratios. Other Census Bureau household surveys experience similar coverage.

Table C-2. **CPS Coverage Ratios**

Age	Non-Black		Black		All persons		
	M	F	M	F	M	F	Total
0 to 14 years	0.948	0.960	0.913	0.930	0.943	0.955	0.949
15 years	0.953	0.986	0.975	1.025	0.956	0.993	0.974
16 years	0.877	0.997	0.886	0.963	0.879	0.991	0.934
17 years	0.958	0.956	0.860	0.932	0.942	0.952	0.947
18 years	0.950	0.958	0.931	0.692	0.947	0.916	0.931
19 years	0.882	0.953	0.773	0.740	0.866	0.920	0.893
20 to 24 years	0.889	0.918	0.645	0.820	0.856	0.904	0.881
25 to 26 years	0.867	0.964	0.687	0.820	0.844	0.943	0.894
27 to 29 years	0.919	0.941	0.700	0.834	0.892	0.926	0.909
30 to 34 years	0.884	0.947	0.667	0.865	0.859	0.936	0.898
35 to 39 years	0.892	0.936	0.693	0.928	0.871	0.935	0.903
40 to 44 years	0.895	0.933	0.781	0.889	0.884	0.928	0.906
45 to 49 years	0.933	0.955	0.842	0.938	0.925	0.953	0.939
50 to 54 years	0.953	0.958	0.845	0.869	0.942	0.948	0.945
55 to 59 years	0.918	0.905	0.797	0.906	0.906	0.905	0.905
60 to 62 years	0.926	0.874	0.702	0.779	0.904	0.864	0.883
63 to 64 years	0.851	0.960	0.814	0.944	0.848	0.959	0.906
65 to 67 years	0.891	0.945	0.785	0.991	0.881	0.950	0.918
68 to 69 years	0.876	0.986	0.741	0.810	0.864	0.970	0.922
70 to 74 years	0.955	1.020	0.866	0.949	0.948	1.014	0.985
75 to 99 years	0.983	1.019	0.713	0.861	0.962	1.006	0.990
15 years and over	0.911	0.951	0.752	0.877	0.893	0.942	0.919
0 years and over	0.919	0.953	0.802	0.891	0.905	0.945	0.926

These coverage ratios are for May 1993.

For additional information on nonsampling error including the possible impact on CPS data when known, refer to Statistical Policy Working Paper 3, *An Error Profile: Employment as Measured by the Current Population Survey*, Office of Federal Statistical Policy and Standards, U.S. Department of Commerce, 1978 and Technical Paper 40, *The Current Population Survey: Design and Methodology*, Bureau of the Census, U.S. Department of Commerce.

Comparability of Data. Data obtained from the CPS and other sources are not entirely comparable. This results from differences in interviewer training and experience and in differing survey processes. This is an example of nonsampling variability not reflected in the standard errors. Use caution when comparing results from different sources.

Caution should also be used when comparing estimates in this report (which reflect 1980 census-based population controls) with estimates for 1980 and earlier years (which reflect 1970 census-based population controls). This change in population controls had relatively little impact on summary measures such as means, medians, and percentage distributions. It did have a significant impact on levels. For example, use of 1980 based population controls results in about a 2-percent increase in the civilian noninstitutional population and in the number of families and households. Thus, estimates of levels for data collected in 1981 and later years will differ from those for earlier years by more than what could be attributed to actual changes in the population. These differences could be disproportionately greater for certain subpopulation groups than for the total population.

Since no independent population control totals for persons of Hispanic origin were used before 1985, compare Hispanic estimates over time cautiously.

Note When Using Small Estimates. Summary measures (such as medians and percentage distributions) are shown only when the base is 75,000 or greater. Because of the large standard errors involved, summary measures would probably not reveal useful information when computed on a smaller base. However, estimated numbers are shown even though the relative standard errors of these numbers are larger than those for corresponding percentages. These smaller estimates permit combinations of the categories to suit data users' needs. These estimates may not be reliable for the interpretation of small differences. For instance, even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Sampling Variability. Sampling variability is variation that occurred by chance because a sample was surveyed rather than the entire population. Standard errors, as calculated by methods described next, are primarily measures of sampling variability, although they may include some nonsampling errors.

Standard Errors and Their Use. A number of approximations are required to derive, at a moderate cost, standard errors applicable to all the estimates in this report. Instead of providing an individual standard error for each estimate, generalized sets of standard errors are provided for various types of characteristics. Thus, the tables show levels of magnitude of standard errors rather than the precise standard errors.

Tables C-3 and C-4 provide standard errors of estimated numbers. Table C-5 provides standard errors of estimated precentages. Table C-6 has standard error parameters for persons, families, households, householders, and unrelated individuals. Table C-6 also provides factors to apply to the standard errors in tables C-3 through C-5. Table C-7 has factors for years prior to 1990. Table C-8 has factors for regional data.

The sample estimate and its standard error enable one to construct a confidence interval. A confidence interval is a range that would include the average result of all possible samples with a known probability. For example, if all possible samples were surveyed under essentially the same general conditions and using the same sample design, and if an estimate and its standard error were calculated from each sample, then approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate would include the average result of all possible samples.

A particular confidence interval may or may not contain the average estimate derived from all possible samples. However, one can say with specified confidence that the interval includes the average estimate calculated from all possible samples.

Some statements in the report may contain estimates followed by a number in parentheses. This number can be added to and subtracted from the estimate to calculate upper and lower bounds of the 90-percent confidence interval. For example, if a statement contains the phrase "grew by 1.7 percent ($\pm$1.0)," the 90-percent confidence interval for the estimate, 1.7 percent, is 0.7 percent to 2.7 percent.

Standard errors may be used to perform hypothesis testing. This is a procedure for distinguishing between population parameters using sample estimates. The most common type of hypothesis appearing in this report is that the population parameters are different. An example of this would be comparing the percentage of 18 to 24 year olds enrolled in college in 1992 to those in 1982.

Tests may be performed at various levels of significance. The significance level of a test is the probability of concluding that the characteristics are different when, in fact, they are the same. All statements of comparison

in the text have passed a hypothesis test at the 0.10 level of significance or better. This means that the absolute value of the estimated difference between characteristics is greater than or equal to 1.645 times the standard error of the difference.

Standard Errors of Estimated Numbers. There are two ways to compute the approximate standard error, s_x, of an estimated number shown in this report. The first uses the formula

$$s_x = fs \qquad (1)$$

where f is a factor from table C-6 and s is the standard error of a estimate obtained by interpolation from table C-3 or C-4. The second method uses formula (2), from which the standard errors in tables C-3 and C-4 were calculated. This formula will provide more accurate results than formula (1).

$$s_x = \sqrt{-(b/T)x^2 + bx} \qquad (2)$$

Here x is the size of the estimate, T is the total number of persons in a specific age group and b is the parameter in table C-6 associated with the particular type of characteristic. If T is not known, for Total or White use 100,000,000; for Blacks and Hispanic use 10,000,000. When calculating standard errors for numbers from cross-tabulations involving different characteristics, use the factor or set of parameters for the characteristic which will give the largest standard error.

Illustration. Table 1 shows there are 3,063,000 3 and 4 year olds enrolled in school and 7,712,000 children in that age group. Use the appropriate parameter from table C-6 and formula (2) to get

Number, x	3,063,000
Total, T	7,712,000
b parameter	2,882
Standard error	73,000
90% conf. int.	2,943,000 to 3,183,000

The standard error is calculalted as

$$s_x = \sqrt{-(2{,}882 \div 7{,}712{,}000) \times 3{,}063{,}000^2 + 2{,}882 \times 3{,}063{,}000} = 73{,}000$$

The 90-percent confidence interval is calculated as 3,063,000 ± 1.645 x 73,000.

A conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

The alternate calculation of the standard error, using formula (1) with f = 1.1 from table C-6 and s = 65,000 by interpolation from table C-3 is

$$s_x = 1.1 \times 65{,}000 = 72{,}000$$

Standard Errors of Estimated Percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. 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 denominator of the percentage are in different categories, use the factor or parameter from table C-6 indicated by the numerator.

The approximate standard error, $s_{x,p}$, of an estimated percentage can be obtained by use of the formula

$$s_{x,p} = fs \qquad (3)$$

In this formula, f is the appropriate factor from table C-6, and s is the standard error of the estimate obtained by interpolation from table C-5.

Alternatively, formula (4) will provide more accurate results. The standard errors in Table C-5 were calculated with this formula.

$$s_{x,p} = \sqrt{\frac{b}{x} p(100 - p)} \qquad (4)$$

Here x is the total number of persons, families, households, or unrelated individuals in the base of the percentage, p is the percentage ($0 \leq p \leq 100$), and b is the parameter in table C-6 associated with the characteristic in the numerator of the percentage.

Illustration. Table 1 shows that of the 13,419,000 persons aged 18 to 21, 43.4 percent were enrolled in college in 1992. Use the appropriate parameter from table C-6 and formula (4) to get

Percentage, p	43.4
Base, x	13,419,000
b parameter	2,532
Standard error	0.7
90% conf. int.	42.2 to 44.6

The standard error is calculated as

$$s_{x,p} = \sqrt{\frac{2{,}532}{13{,}419{,}000} (43.4)(100.0 - 43.4)} = 0.7$$

The 90-percent confidence interval for the estimated percentage of persons aged 18 to 21 in 1992 enrolled in college is calculated as 43.4 ± 1.645 x 0.7.

The alternate calculation of the standard error, using formula (3), with f = 1.0 from table C-6 and s = 0.7 by interpolation from table C-5, is

$$s_{x,p} = 1.0 \times 0.7 = 0.7$$

Standard Error of a Difference. The standard error of the difference between two sample estimates is approximately equal to

$$s_{x-y} = \sqrt{s_x^2 + s_y^2} \qquad (5)$$

where s_x and s_y are the standard errors of the estimates, x and y. The estimates can be numbers, percentages, ratios, etc. This will represent the actual standard error quite accurately for the difference between estimates of the same characteristic in two different areas, or for the difference between separate and uncorrelated characteristics in the same area. However, if there is a high positive (negative) correlation between the two characteristics, the formula will overestimate (underestimate) the true standard error.

Illustration. Table 1 shows that of the 55,971,000 males 35 years old and over, 1.4 percent were enrolled in college and of the 63,561,000 females of the same age group, 2.5 percent were enrolled in college. Use the appropriate parameters from table C-6 and formulas (2) and (4) to get

	x	y	difference
Percentage	1.4	2.5	1.1
Base	55,971,000	63,561,000	-
b parameter	2,532	2,532	-
Standard error	0.1	0.1	0.1
90% conf. int.	1.2 to 1.6	2.3 to 2.7	0.9 to 1.3

The standard error of the estimated differences calculated as

$$s_{x-y} = \sqrt{(0.1)^2 + (0.1)^2} = 0.1$$

The 90-percent confidence interval around the difference is calculated as 1.1 ± 1.645 x 0.1. Since the interval does not contain zero, we can conclude with 90-percent confidence that the proportion of females aged 35 and over enrolled in college is greater than that for males.

Table C-3. **1992 Standard Errors of Estimated Numbers: Total or White**

(Numbers in thousands)

Size of estimate	Total persons in age group									
	100	250	500	1,000	2,500	5,000	10,000	25,000	50,000	100,000
10	4.8	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
20	6.4	6.8	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.1
30	7.3	8.2	8.4	8.6	8.7	8.7	8.7	8.7	8.7	8.7
40	7.8	9.2	9.7	9.9	10.0	10.0	10.0	10.1	10.1	10.1
50	8.0	10.1	10.7	11.0	11.1	11.2	11.2	11.2	11.2	11.2
75	6.9	11.5	12.7	13.3	13.6	13.7	13.7	13.8	13.8	13.8
100	(X)	12.3	14.2	15.1	15.6	15.8	15.8	15.9	15.9	15.9
200	(X)	10.1	17.4	20.1	21.6	22.0	22.3	22.4	22.5	22.5
300	(X)	(X)	17.4	23.1	25.9	26.7	27.1	27.4	27.5	27.5
400	(X)	(X)	14.2	24.7	29.2	30.5	31.2	31.6	31.7	31.8
500	(X)	(X)	(X)	25.2	31.8	33.8	34.7	35.2	35.4	35.5
750	(X)	(X)	(X)	21.8	36.5	40.2	41.9	42.9	43.2	43.4
1,000	(X)	(X)	(X)	(X)	39.0	45.0	47.7	49.3	49.8	50.1
2,000	(X)	(X)	(X)	(X)	31.8	55.1	63.6	68.3	69.7	70.4
3,000	(X)	(X)	(X)	(X)	(X)	55.1	72.9	81.8	84.5	85.8
4,000	(X)	(X)	(X)	(X)	(X)	45.0	78.0	92.2	96.5	98.6
5,000	(X)	(X)	(X)	(X)	(X)	(X)	79.6	100.6	106.7	109.7
7,500	(X)	(X)	(X)	(X)	(X)	(X)	68.9	115.3	127.0	132.5
10,000	(X)	(X)	(X)	(X)	(X)	(X)	(X)	123.3	142.3	151.0
20,000	(X)	(X)	(X)	(X)	(X)	(X)	(X)	100.6	174.3	201.3
30,000	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	174.3	230.6
40,000	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	142.3	246.5
50,000	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	251.6

Note: For a particular characteristic, see table C-6 for the appropriate factor to apply to the above standard errors.

X Not applicable.

Table C-4. **1992 Standard Errors of Estimated Numbers: Black or Other Races and Hispanic**

(Numbers in thousands)

Size of estimate	Total persons in age group						
	100	250	500	1,000	2,500	5,000	10,000
Black or Other Races							
10	5.6	5.7	5.8	5.8	5.8	5.8	5.8
20	7.4	7.9	8.1	8.2	8.2	8.3	8.3
30	8.5	9.5	9.8	10.0	10.1	10.1	10.1
40	9.1	10.7	11.2	11.5	11.6	11.7	11.7
50	9.3	11.7	12.4	12.8	13.0	13.0	13.1
75	8.0	13.4	14.8	15.4	15.8	15.9	16.0
100	(X)	14.3	16.6	17.6	18.1	18.3	18.4
200	(X)	11.7	20.3	23.4	25.1	25.6	25.9
300	(X)	(X)	20.3	26.8	30.1	31.1	31.6
400	(X)	(X)	16.6	28.7	33.9	35.5	36.3
500	(X)	(X)	(X)	29.3	37.0	39.3	40.3
750	(X)	(X)	(X)	25.3	42.4	46.7	48.7
1,000	(X)	(X)	(X)	(X)	45.3	52.3	55.5
2,000	(X)	(X)	(X)	(X)	37.0	64.1	74.0
3,000	(X)	(X)	(X)	(X)	(X)	64.1	84.8
4,000	(X)	(X)	(X)	(X)	(X)	52.3	90.7
5,000	(X)	(X)	(X)	(X)	(X)	(X)	92.5
7,500	(X)	(X)	(X)	(X)	(X)	(X)	80.1
Hispanic							
10	7.2	7.4	7.5	7.6	7.6	7.6	7.6
20	9.6	10.3	10.5	10.6	10.7	10.7	10.7
30	11.0	12.3	12.8	13.0	13.1	13.1	13.1
40	11.8	13.9	14.6	14.9	15.1	15.1	15.2
50	12.0	15.2	16.1	16.6	16.8	16.9	16.9
75	10.4	17.4	19.2	20.0	20.5	20.6	20.7
100	(X)	18.6	21.5	22.8	23.5	23.8	23.9
200	(X)	15.2	26.3	30.4	32.6	33.3	33.6
300	(X)	(X)	26.3	34.8	39.0	40.3	41.0
400	(X)	(X)	21.5	37.2	44.0	46.1	47.1
500	(X)	(X)	(X)	38.0	48.0	51.0	52.4
750	(X)	(X)	(X)	32.9	55.0	60.7	63.3
1,000	(X)	(X)	(X)	(X)	58.8	68.0	72.1
2,000	(X)	(X)	(X)	(X)	48.0	83.2	96.1
3,000	(X)	(X)	(X)	(X)	(X)	83.2	110.1
4,000	(X)	(X)	(X)	(X)	(X)	68.0	117.7
5,000	(X)	(X)	(X)	(X)	(X)	(X)	120.1
7,500	(X)	(X)	(X)	(X)	(X)	(X)	104.0

Note: For a particular characteristic, see table C-6 for the appropriate factor to apply to the above standard errors.

X Not applicable

Table C-5. **1992 Standard Errors of Estimated Percentages**

Base of percentage (thousands)	Estimated percentage				
	2 or 98	5 or 95	10 or 90	25 or 75	50
Total or White					
75	2.6	4.0	5.5	8.0	9.2
100	2.2	3.5	4.8	6.9	8.0
250	1.4	2.2	3.0	4.4	5.0
500	1.0	1.6	2.1	3.1	3.6
1,000	0.7	1.1	1.5	2.2	2.5
2,500	0.4	0.7	1.0	1.4	1.6
5,000	0.3	0.5	0.7	1.0	1.1
10,000	0.2	0.3	0.5	0.7	0.8
25,000	0.1	0.2	0.3	0.4	0.5
50,000	0.1	0.2	0.2	0.3	0.4
100,000	0.1	0.1	0.2	0.2	0.3
Black or Other Races					
25	5.2	8.1	11.1	16.0	18.5
50	3.7	5.7	7.9	11.3	13.1
75	3.0	4.7	6.4	9.3	10.7
100	2.6	4.0	5.6	8.0	9.3
250	1.6	2.6	3.5	5.1	5.9
500	1.2	1.8	2.5	3.6	4.1
1,000	0.8	1.3	1.8	2.5	2.9
2,500	0.5	0.8	1.1	1.6	1.9
5,000	0.4	0.6	0.8	1.1	1.3
10,000	0.3	0.4	0.6	0.8	0.9
20,000	0.2	0.3	0.4	0.6	0.7
Hispanic					
25	6.7	10.5	14.4	20.8	24.0
50	4.8	7.4	10.2	14.7	17.0
75	3.9	6.0	8.3	12.0	13.9
100	3.4	5.2	7.2	10.4	12.0
250	2.1	3.3	4.6	6.6	7.6
500	1.5	2.3	3.2	4.7	5.4
1,000	1.1	1.7	2.3	3.3	3.8
2,500	0.7	1.0	1.4	2.1	2.4
5,000	0.5	0.7	1.0	1.5	1.7
10,000	0.3	0.5	0.7	1.0	1.2
20,000	0.2	0.4	0.5	0.7	0.8

Note: For a particular characteristic, see table C-6 for the appropriate factor to apply to the above standard errors.

Table C-6. **1992 Standard Error Parameters for School Enrollment**

Characteristic	Total or White		Black or other races		Hispanic	
	b	f	b	f	b	f
Persons Enrolled in School:						
Total	2,532	1.0	3,425	1.0	5,772	1.0
Children 13 and under	2,882	1.1	2,882	0.9	2,882	0.7
Marital Status	4,786	1.4	6,865	1.4	11,570	1.4
Household Characteristics:						
Head, wife, or primary individual	1,899	0.9	1,716	0.7	2,892	0.7
Child or other relative in primary family, Secondary family member	4,786	1.4	6,865	1.4	11,570	1.4
Income, earnings	2,485	0.9	2,485	0.9	2,234	0.6
Employment Status, Occupation:						
Both sexes	2,485	1.0	2,485	0.9	2,234	0.4
Male	2,150	0.9	2,150	0.6	2,150	0.4
Female	1,843	0.9	1,843	0.7	1,843	0.6

Notes: To estimate standard errors for school enrollment prior to 1990 multiply the b parameter for 1992 by the appropriate factor in table C-7. The parameters for 1990 through 1992 are the same. The b parameters should be multiplied by 1.5 for nonmetropolitan residence categories. The b parameters should be multiplied by 1.91 for farm characteristics. The b parameters should be multiplied by the factors in table C-8 for regional data.

Table C-7. **Factors to Calculate School Enrollment b Parameters Prior to 1990**

Year	Total or White	Black or other races	Hispanic
1988-1989	1.08	1.08	1.30
1985-1987	0.91	0.91	0.93
1982-1984	0.91	0.91	0.77
1977-1981	0.82	0.82	0.68
1967-1976	0.80	0.80	0.67
1957-1966	1.22	1.22	(X)
Before 1956	1.83	1.83	(X)

Notes: Apply the appropriate factor to the b parameter for 1992. The parameters for 1990 through 1992 are the same. Use the Total or White factors to calculate standard errors for children 13 and under.

X Not applicable

Table C-8. **Regional Factors to Apply to 1992 b Parameters**

Characteristic	Factor
U.S. Totals	1.00
Region	
Northeast	0.74
Midwest	0.98
South	1.04
West	1.06