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**After-Tax
Money Income
Estimates of
Households: 1983**

U.S. Department of Commerce BUREAU OF THE CENSUS

Acknowledgments

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After-Tax Money Income Estimates of Households: 1983

INTRODUCTION

This report is the fourth in a series presenting estimates of after-tax household income and taxes paid by households. Previous special studies released by the Census Bureau contained estimates of after-tax household income for 1974 and 1980, 1981, and 1982. Data from the Annual Housing Survey, the Income Survey Development Program, and the Internal Revenue Service were combined with the March 1984 Current Population Survey (CPS) data to derive the estimates shown in this report. The main purpose of this report is to provide a better measure of year-to-year changes in household purchasing power and of differences in purchasing power between subgroups of the population. Four types of taxes were simulated and subsequently deducted from the total money income received by households in order to estimate after-tax income: Federal individual income taxes, State individual income taxes, FICA and Federal retirement payroll taxes, and property taxes on owner-occupied housing. A discussion of the important limitations of the simulation procedures and underreporting of income in the CPS is contained in the limitations section. A detailed description of the tax simulation methodology can be found in appendix A, along with comparisons of the results of the tax simulation with data from the Internal Revenue Service and other administrative sources. The procedures used to develop the estimates in this report are based on revisions to those used in previous years. The section on revisions to the tax simulation methodology describes the revised procedures.

HIGHLIGHTS

- Mean household income after taxes was \$20,000 in 1983, up by 2.4 percent over the 1982 figure after accounting for the 3.2-percent rise in consumer prices. This increase follows a 1.7-percent increase between 1981 and 1982. (The rates of change for 1982 and 1983 are not statistically different from one another.)
- Mean household income before taxes (\$25,400) increased between 1982 and 1983 by 1.2 percent after adjusting for inflation.
- Taxes absorbed about 21 percent of the total money income received by households, down slightly from 22 percent in 1982. In 1981, 23 percent of the total income received by households went to pay taxes.

- Households paid an average of \$5,890 in taxes in 1983, about \$170 lower than those paid in 1982 after adjusting for price change.
- The mean after-tax income of households in the Northeast, South, and West Regions increased in 1983. Households in the Midwest (formerly the North Central Region) showed no statistically significant increases in after-tax income.
- Married couples with children recorded a real increase of 2.6 percent in mean after-tax income.
- Married couples without children had after-tax incomes that were 3.3 percent higher in 1983. This increase was not significantly different than that for married couples with children.
- The mean income after taxes for households with a householder age 65 years and over showed no statistically significant increase in 1983. In 1982, their mean income rose by 5.2 percent.

AFTER-TAX INCOME

After accounting for taxes and the 3.2-percent increase in consumer prices, average household income rose by about 2.4 percent between 1982 and 1983. The average income for 1983 was \$20,000, compared with \$19,540 in 1982. The extent of this increase was clearly associated with the 10-percent reduction in 1983 Federal income tax rates as household income before taxes rose by only 1.2 percent and average amounts of State income taxes and payroll taxes were higher in 1983. The 1983 Federal income tax reduction was the third of four annual tax rate reductions scheduled by the Economic Recovery Tax Act of 1981. The increase in average household income after taxes in 1983 was not significantly different from the 1.7-percent increase in real terms recorded between 1981 and 1982.

The after-tax income of White households (\$20,750) increased by 2.4 percent for 1983. The average for Black households (\$13,670) showed some evidence of an increase. Spanish-origin households (\$16,080) showed no statistically significant change from 1982 (table A).

After-tax incomes of households in the Northeast (\$20,290), South (\$19,470) and West (\$21,150) Regions were higher in 1983. No statistically significant increase

**Table A. Comparisons of Mean After-Tax Household Income, by Selected Characteristics:
1983 and 1982**

(In 1983 dollars)

Characteristic	1983	1982 ^r	Percent change
All households.....	\$20,001	\$19,535	*2.4
RACE OR SPANISH ORIGIN			
White.....	20,751	20,256	*2.4
Black.....	13,673	13,386	**2.1
Spanish origin ¹	16,076	15,784	1.8
REGION			
Northeast.....	20,285	19,530	*3.9
Midwest ²	19,558	19,382	0.9
South.....	19,474	19,001	*2.5
West.....	21,153	20,642	*2.5
TYPE OF FAMILY HOUSEHOLD			
Married couples with children.....	24,824	24,188	*2.6
Married couples without children.....	24,418	23,637	*3.3
Female householder, no husband present, with related children.....	11,302	11,236	0.6
AGE OF HOUSEHOLDER			
Under 65 years.....	21,511	20,974	*2.6
65 years and over.....	14,307	14,139	1.2

*Significant at the 95-percent confidence level.

**Significant at the 90-percent confidence level.

^r Revised

¹Persons of Spanish origin may be of any race.

²Formerly the North Central Region.

occurred for the average incomes of households in the Midwest (\$19,560) Region.¹

Average after-tax income increased for 1983 for married-couple family households both with children (\$24,820) and without children (\$24,420). There was no significant change in 1983 among female family households with no husband present (\$11,300).

Households with a householder under 65 (\$21,510) had a 2.6-percent increase in their average after-tax income for 1983, while the average after-tax income of households with a householder age 65 and over (\$14,310) did not change significantly.

The payment of the four types of taxes simulated in this study reduced the income available to households by about \$463 billion in 1983. This decrease in income available is illustrated in tables B and C by comparisons of the distribution of household income before and after taxes. Following

the payment of taxes, the number of households with incomes of \$50,000 or more fell from about 8.8 million to 3.2 million. In contrast, the number of households with incomes less than \$15,000 increased from 30.7 million before taxes to 36.5 million after taxes.

TAXES AND THE POVERTY POPULATION

In 1983, about 64 percent of households with incomes below the poverty level paid one or more of the four taxes covered in this study. (See table D.) The taxes paid by poverty households amounted to about 7 percent of their before-tax money incomes. The payment of taxes reduced the mean income of poverty households from \$4,480 before taxes to \$4,250 after taxes.

The most common type of tax paid by households below the poverty level was FICA payroll taxes: 44 percent paid this type of tax in 1983. Eight percent of all poverty households paid Federal income taxes in 1983, and 13 percent paid State

¹Mean after-tax incomes in the Midwest and South Regions are not significantly different from one another.

Table B. Number and Percentage of Households, by Before- and After-Tax Income: 1983

(Numbers in thousands)

Household income	Before taxes		After taxes	
	Number	Percent distribution	Number	Percent distribution
Total.....	85,407	100.0	85,407	100.0
Under \$5,000.....	7,862	9.2	8,580	10.0
\$5,000 to \$7,499.....	6,211	7.3	6,804	8.0
\$7,500 to \$9,999.....	5,503	6.4	7,047	8.3
\$10,000 to \$12,499.....	6,002	7.0	7,323	8.6
\$12,500 to \$14,999.....	5,122	6.0	6,723	7.9
\$15,000 to \$17,499.....	5,530	6.5	6,750	7.9
\$17,500 to \$19,999.....	4,686	5.5	6,356	7.4
\$20,000 to \$22,499.....	5,045	5.9	5,686	6.7
\$22,500 to \$24,999.....	4,171	4.9	5,220	6.1
\$25,000 to \$27,499.....	4,431	5.2	4,362	5.1
\$27,500 to \$29,999.....	3,443	4.0	3,787	4.4
\$30,000 to \$32,499.....	3,670	4.3	3,133	3.7
\$32,500 to \$34,999.....	2,965	3.5	2,640	3.1
\$35,000 to \$37,499.....	2,819	3.3	2,139	2.5
\$37,500 to \$39,999.....	2,249	2.6	1,757	2.1
\$40,000 to \$44,999.....	4,018	4.7	2,365	2.8
\$45,000 to \$49,999.....	2,905	3.4	1,514	1.8
\$50,000 and over.....	8,774	10.3	3,221	3.8
Median income.....	\$20,885	(X)	\$17,306	(X)
Mean income.....	\$25,401	(X)	\$20,001	(X)
Income per household member.....	\$9,377	(X)	\$7,383	(X)
Index of income concentration.....	.407	(X)	.375	(X)

X Not applicable.

income taxes. One-third of the 11.8 million poverty households paid property taxes on their homes in 1983. There was some evidence of increases between 1982 and 1983 in the

percentages of poverty households paying Federal income taxes and FICA payroll taxes, but a decline in the percentage paying property taxes.

Table C. Percent Share of Aggregate Income Received by Each Fifth of Households, Before and After Taxes: 1983

Fifth	Before taxes		After taxes	
	Lower limit	Percent share of aggregate income	Lower limit	Percent share of aggregate income
Lowest fifth.....	(X)	3.9	(X)	4.7
Second fifth.....	8,865	9.9	8,101	11.1
Third fifth.....	16,564	16.4	14,138	17.3
Fourth fifth.....	25,573	24.7	20,657	24.8
Highest fifth.....	38,401	45.1	29,763	42.0

X Not applicable.

Table D. Comparisons of Households Below the Poverty Level Paying Taxes: 1983 and 1982

(Numbers in thousands)

Characteristic	1983	1982 ^r	Difference, 1983-82
Number below the poverty level ¹	11,779	11,535	**244
Percent of before-tax money income paid in taxes.....	6.7	7.6	**-0.9
Percent paying--			
One or more taxes.....	63.6	64.2	-0.6
Federal income taxes.....	7.6	6.9	**0.7
State income taxes.....	13.1	13.1	-
FICA payroll taxes.....	44.0	42.8	**1.2
Property taxes on their own homes.....	33.7	35.7	*-2.0

*Significant at the 95-percent confidence level.

**Significant at the 90-percent confidence level.

^r Revised.¹These poverty figures differ slightly from those previously published. For further details, see appendix B.**DISTRIBUTION OF TAXES AND TAXES PAID**

Ninety-two percent of U.S. households paid one or more of the taxes covered in this study in 1983 (table E). This proportion showed no significant difference from 1982. In 1983, about 75 percent of all households paid Federal income taxes, 63 percent paid State income taxes, and 74 percent paid FICA payroll taxes. There was some evidence of a small increase in the proportion of households paying Federal income taxes between 1982 and 1983. The proportion of households paying State income taxes and FICA payroll taxes showed no statistically significant change. The proportion of households paying property taxes on their own homes (61 percent) remained unchanged from 1982.

The mean amount of taxes paid in 1983 (\$5,890) was about \$170 lower than in 1982, after adjustment for inflation. Mean Federal income taxes (\$4,080) declined by \$310 between 1982 and 1983. In contrast, State income taxes (\$1,080) and FICA payroll taxes (\$1,560) were higher in 1983 than in 1982.

The proportion of before-tax income paid in taxes averaged about 22 percent in 1983 for households paying at least one of the four types of taxes. The average for households paying Federal income taxes was about 13 percent, compared with only about 4 percent for State income taxes. Among households paying FICA payroll taxes, the average amount paid was about 5 percent of the average before-tax income. Property taxes accounted for about 2 percent of the before-tax income of households paying this tax.

Fifty-seven percent of the \$463 billion in taxes paid in 1983 were Federal income taxes. FICA payroll taxes accounted for another 21 percent of the total tax. State taxes and

homeowner property taxes made up 12 and 8 percent of the total, respectively.

The after-tax income data also provide information on the average amount of taxes paid and the percentage of income paid in taxes for households at different positions along the income distribution. The percentage of average income paid in taxes, as shown in table F, gives a good approximation of the effective average tax rates by income interval. Generally, the proportion of income paid in taxes in 1983 was slightly lower than that paid in 1982. The overall tax rate decreased by about 4 percent, as shown in table F. Households in all income categories experienced a statistically significant decline in the percent of income paid in taxes.²

LIMITATIONS ON THE ESTIMATES OF AFTER-TAX INCOME

The estimates of after-tax income shown in this report were derived by simulating the amount of taxes paid by sample households on the March Current Population Survey (CPS) data file. The tax simulation procedures were based on a "statistical" combination of data from the Internal Revenue Service (IRS), summary of State individual income tax regulations, data on the characteristics of persons paying FICA payroll taxes from the Social Security Administration, property tax information from the Annual Housing Survey (AHS), and the March CPS microdata file. In order to combine these data sets in the estimation process, important assumptions were made that may have affected the after-tax income estimates.

²There was some evidence of a decline in the tax rate of households in the "Under \$10,000" group.

Table E. Comparisons of Percentage of Households Paying Taxes, Mean Taxes Paid, Percentage of Before-Tax Money Income Paid in Taxes, and Percentage of Taxes Paid, by Type of Tax: 1983 and 1982

(In 1983 dollars)

Type of tax	1983	1982 ^r	Difference 1983-82
PERCENTAGE OF HOUSEHOLDS PAYING SPECIFIED TAX			
One or more taxes.....	92.0	92.0	-
Federal income taxes.....	75.4	75.0	**0.4
State income taxes.....	62.7	63.0	-0.3
FICA payroll taxes.....	74.2	74.5	-0.3
Property taxes on own home.....	60.7	61.0	-0.3
MEAN AMOUNT OF TAXES PAID			
One or more taxes.....	\$5,889	\$6,055	*-\$166
Federal income taxes.....	4,077	4,388	*-311
State income taxes.....	1,075	998	*77
FICA payroll taxes.....	1,561	1,517	*44
Property taxes on own home ¹	737	761	-24
MEAN AMOUNT OF TAXES PAID AS A PERCENT OF MEAN TOTAL MONEY INCOME			
One or more taxes.....	21.7	22.6	*-0.9
Federal income taxes.....	13.0	14.1	*-1.1
State income taxes.....	3.5	3.3	*0.2
FICA payroll taxes.....	5.3	5.2	*0.1
Property taxes on own home ¹	2.4	2.6	-0.2
Total amount of taxes (billions).....	\$462.6	\$467.7	-\$5.1
PERCENTAGE OF TAXES PAID BY TYPE OF TAX			
One or more taxes.....	100.0	100.0	(X)
Federal income taxes.....	56.8	59.0	**2.2
State income taxes.....	12.4	11.3	*1.1
FICA payroll taxes.....	21.4	20.3	*1.1
Property taxes on own home ¹	8.3	8.3	-

*Significant at the 95-percent confidence level.

**Significant at the 90-percent confidence level.

X Not applicable.

r Revised.

¹Estimates of property taxes for 1983 and 1982 are not directly comparable because of differences in the methods of computation. See appendix A for details, as well as a discussion of differences between simulated property tax amounts and those reported on the Annual Housing Survey (AHS).

In addition, the general sampling and nonsampling errors associated with survey data, especially the underreporting of income, must always be kept in mind. Following is a brief discussion of some of the more important limitations on the estimates and the estimation process. The first limitation that should be mentioned is the difference between CPS and IRS income concepts. One phase of the tax estimation process is the calculation of adjusted gross income (AGI) based on the CPS income. The CPS excludes capital gains (or losses) while AGI for tax purposes includes income from this source.

Amounts of capital gains were simulated for the CPS in the tax estimation procedure. (See details in appendix A of this report.) The computation of AGI on Federal individual income tax returns allows "adjustments" and various exclusions from total income. These include Individual Retirement Accounts, moving expenses, disability income exclusion, alimony paid, and employee business expenses. A simulation of the Individual Retirement Accounts was made using IRS statistics and data reported in the May 1983 CPS supplement. In addition, deductions were simulated for married-couple tax-filing

Table F. Mean Amount of Taxes Paid as a Percentage of Mean Total Money Income: 1983 and 1982^r

Before-tax money income	1983	1982 ^r	Percent change
Total.....	21.7	22.6	*-4.0
Under \$10,000.....	9.3	10.0	** -7.0
\$10,000 to \$14,999..	11.5	12.1	*-5.0
\$15,000 to \$19,999..	14.6	15.5	*-5.8
\$20,000 to \$24,999..	17.4	18.5	*-5.9
\$25,000 to \$29,999..	19.3	20.8	*-7.2
\$30,000 to \$34,999..	21.0	22.3	*-5.8
\$35,000 to \$39,999..	22.3	23.4	*-4.7
\$40,000 to \$44,999..	23.1	24.6	*-6.1
\$45,000 to \$49,999..	24.2	25.8	*-6.2
\$50,000 and over....	28.9	30.6	*-5.6

*Significant at the 95-percent confidence level.

**Significant at the 90-percent confidence level.

r Revised.

units in which both spouses had earnings. Simulations for the other adjustments were not made. Had these adjustments been simulated, the estimated AGI levels from the CPS would have been lower resulting in slightly higher after-tax incomes. While the overall CPS-estimated AGI was about the same as the IRS figure for 1983, the CPS and IRS amounts differ considerably by income type as discussed later.

Second, an initial step in the tax simulation process is the formation of tax filing units using the survey information on household relationship, marital status, and dependency rules based on income. The CPS records this information for each "permanent" household member as of the time of interview in March. The simulation of tax filing units does not, therefore, account for differences in household composition that may have existed during the year for which taxes were simulated. Because of the CPS household definition, it was also not possible to simulate dependents living outside the household. The exact effect of these limitations is difficult to estimate since some simulated tax units will have too few dependents (exemptions) and some will have too many. It seems likely that, overall, too few exemptions would be simulated. This situation probably results in a slight underestimate of after-tax income levels because all exemptions have not been accounted for.

The combination of IRS tax return statistics with the March CPS income data may have also affected the final estimates to a small degree because the IRS returns include units which are not contained in the CPS universe. These include 1) prior year delinquent returns, 2) returns of Armed Forces members living overseas or on base *without families*, and 3) returns of decedents.

The procedures for simulating Federal and State individual income taxes tend to underestimate the actual variation in taxes paid by AGI level and, therefore, may tend to underestimate the variation in after-tax incomes. This occurs because the simulation procedures used, in some cases, averages to assign statuses and amounts to CPS tax filing units. For example, the amount of deductions for units assigned itemizing status was simulated using a matrix showing the IRS ratio of itemized deductions to AGI for all tax units by AGI interval, type of return, number of dependents, and presence of a home mortgage. The true variation in deductions was not simulated since all units within a specified matrix cell were assigned the same proportion of their AGI as deductions. The net effect of this aspect of the simulation procedure on the final after-tax income estimates is not known.

Comparisons of the distribution of AGI derived from the March CPS with that based directly on tax returns indicate significant differences and year-to-year variation in these differences. These differences for 1983 can be examined in table A-4 of appendix A. Year-to-year variations can be examined by referring to similar tables in previous reports. Of note is the change in the relationship between simulated and IRS data for the "\$75,000 and over" category. In 1980, the simulated estimate for number of taxable returns in this AGI interval was 17 percent below the IRS figure. For 1983 the simulated number is 6 percent higher. This change along with others that have occurred from year to year may affect comparisons of after-tax data between years. The effect of these changes on the after-tax income estimates is not known.

Finally, another important limitation is the underreporting of money income in the survey. This is a common problem encountered in household surveys that attempt to collect income data. Underreporting results in a downward bias in the estimates of income from the March CPS. While income underreporting is a serious problem in household surveys such as the March CPS, its effect on measures of year-to-year change in levels of income and poverty is much less important because year-to-year variations in underreporting are relatively small. Estimates of underreporting are contained in appendix D.

REVISIONS TO THE TAX SIMULATION METHODOLOGY

Appendix A contains a detailed description of the methodology used to simulate Federal income taxes in 1983. Included in the appendix are descriptions of several modifications to the 1983 Federal tax simulation procedures. These modifications include expanding the matrix used to impute capital gains and losses. In previous years, capital gains and losses were imputed to tax filing units according to their adjusted gross income level. Beginning in 1983, the matrix used to impute capital gains and losses was expanded to include adjusted gross income, type of return, and age of tax filer. The matrix used to assign amounts of income itemized was also expanded. Previously, level of adjusted gross income

was the only variable used to assign these amounts. Beginning in 1983, the matrix used to assign amounts of income itemized was expanded to include adjusted gross income, type of return, number of dependents, and presence of a home mortgage.

In addition, in 1983 the simulation was modified to assure that the amount of income itemized was equal to or greater than the sum of property and State income taxes paid by the tax filing unit. Also, all tax filers with property and State income taxes exceeding the minimum needed to itemize were assigned to be itemizing tax filing units. Previously, itemization status and amounts were assigned independently of State and property taxes.

Finally, in 1983 the dependent child care credit was imputed to Federal tax filers for the first time. Previously, the only credit simulated was the earned income tax credit.

These revisions had little effect on overall amounts of Federal income taxes paid, however, because comparisons of 1982 and 1983 data were important the 1982 data published previously were revised based on the methodology implemented in 1983 to provide comparability. In this report, all comparisons between 1983 and 1982 were made using the 1982 revised simulation file. Consequently, the 1982 tax data shown in this report differ slightly from those previously published.

Table G shows the effect of revisions on the 1982 after-tax income figures. Overall, mean after-tax income changed very slightly, from \$18,906 to \$18,926. There were some types of households, however, with somewhat larger changes. The after-tax income of elderly households declined by 0.5 percent, from \$13,767 to \$13,698. This change was caused mainly by the inclusion of age as a variable in the matrix used

Table G. Comparisons of Mean After-Tax Household Income Before and After Revisions, by Selected Characteristics: 1982

Characteristic	Mean income		Percent difference
	Original	Revised	
All households.....	\$18,906	\$18,926	0.1
RACE OR SPANISH ORIGIN			
White.....	19,606	19,625	0.1
Black.....	12,955	12,969	0.1
Spanish origin ¹	15,297	15,292	-
REGION			
Northeast.....	18,915	18,921	-
Midwest ²	18,754	18,778	0.1
South.....	18,399	18,409	0.1
West.....	19,953	19,999	0.2
TYPE OF HOUSEHOLD			
Married couples with children.....	23,307	23,434	0.5
Married couples without children.....	22,934	22,900	-0.1
Female householder, no husband present, with related children.....	10,868	10,886	0.2
Nonfamily households.....	12,128	12,098	-0.2
AGE OF HOUSEHOLDER			
Under 65 years.....	20,277	20,320	0.2
65 years and over.....	13,767	13,698	-0.5
TENURE			
Owner occupied.....	21,594	21,659	0.3
Renter occupied.....	13,928	13,863	-0.5

¹Persons of Spanish origin may be of any race.

²Formerly the North Central Region.

to impute capital gains. The use of a variable showing presence of a home mortgage in the matrix used to impute amounts of income itemized was the main cause of the differences in the revised figures for owner- and renter-occupied households. The mean after-tax income of owner-occupied households increased by 0.3 percent, from \$21,594 to

\$21,659, while the after-tax income of renters declined by 0.5 percent, from \$13,928 to \$13,863. The addition of the child care credit was a factor in the 0.5 percent increase in the after-tax income of married couples with children, from \$23,307 to \$23,434.

SYMBOLS USED IN TABLES

- Represents zero or rounds to zero.
 - B Base less than 75,000.
 - X Not applicable.
-

Table 1. All Households, Aggregate Income, Mean Income, Income per Household Member (Before and After Taxes), and Number of Persons in Households, by Before-Tax Money Income Levels and Selected Characteristics: 1983—Con.

(Households as of March 1984. For meaning of symbols, see text)

Before-tax money income level and characteristic	All households		Before taxes					After taxes					Total number of persons in households (thous.)
	Number (thous.)	Percent distribution	Aggregate income		Mean income		Income per household member (dol.)	Aggregate income		Mean income		Income per household member (dol.)	
			Amount (bil. of dol.)	Percent distribution	Value (dol.)	Standard error (dol.)		Amount (bil. of dol.)	Percent distribution	Value (dol.)	Standard error (dol.)		
RACE AND SPANISH ORIGIN OF HOUSEHOLDER—CON.													
Spanish Origin¹													
Total	4 326	100.0	83.8	100.0	19 369	363	5 617	69.5	100.0	16 076	271	4 662	14 015
Under \$2,500	179	4.1	.2	.2	1 021	159	379	.2	.2	961	162	357	481
\$2,500 to \$4,999	363	8.4	1.4	1.7	3 911	56	1 531	1.4	2.0	3 816	65	1 493	928
\$5,000 to \$7,499	479	11.1	3.0	3.5	6 180	52	2 166	2.9	4.1	6 010	54	2 107	1 367
\$7,500 to \$9,999	354	8.2	3.1	3.7	8 674	58	2 688	2.9	4.1	8 121	65	2 517	1 143
\$10,000 to \$12,499	345	8.0	3.8	4.6	11 146	64	3 315	3.5	5.0	10 145	78	3 017	1 160
\$12,500 to \$14,999	323	7.5	4.4	5.3	13 650	60	3 944	3.9	5.6	12 121	83	3 502	1 118
\$15,000 to \$17,499	330	7.6	5.4	6.4	16 240	65	4 404	4.6	6.7	14 084	94	3 819	1 217
\$17,500 to \$19,999	240	5.6	4.4	5.3	18 491	69	5 110	3.8	5.5	15 860	121	4 383	870
\$20,000 to \$22,499	298	6.9	6.3	7.5	21 123	69	6 012	5.3	7.6	17 825	114	5 073	1 046
\$22,500 to \$24,999	224	5.2	5.3	6.3	23 624	68	6 004	4.4	6.3	19 688	128	5 004	880
\$25,000 to \$27,499	180	4.2	4.7	5.6	26 042	89	6 725	3.9	5.6	21 515	176	5 556	696
\$27,500 to \$29,999	161	3.7	4.6	5.5	28 642	83	7 857	3.8	5.4	23 510	191	6 449	586
\$30,000 to \$32,499	137	3.2	4.3	5.1	31 037	99	8 224	3.5	5.0	25 157	216	6 886	518
\$32,500 to \$34,999	108	2.5	3.6	4.3	33 680	107	8 010	3.0	4.3	27 375	272	6 510	455
\$35,000 to \$37,499	120	2.8	4.3	5.2	38 170	97	9 787	3.4	4.9	28 610	257	7 741	443
\$37,500 to \$39,999	63	1.5	2.4	2.9	(B)	(B)	(B)	1.9	2.8	(B)	(B)	(B)	246
\$40,000 to \$44,999	142	3.3	6.0	7.2	42 264	186	10 123	4.7	6.8	33 448	346	8 011	582
\$45,000 to \$49,999	80	1.8	3.8	4.5	47 150	241	12 265	2.9	4.2	36 329	538	9 450	307
\$50,000 to \$59,999	102	2.4	5.5	6.6	54 114	457	12 696	4.3	6.1	41 583	512	9 758	436
\$60,000 to \$74,999	60	1.4	3.9	4.7	(B)	(B)	(B)	3.0	4.2	(B)	(B)	(B)	256
\$75,000 and over	36	.8	3.3	3.9	(B)	(B)	(B)	2.3	3.4	(B)	(B)	(B)	165
Median income	15 906	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Standard error	388	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
REGION													
Northeast													
Total	18 199	100.0	478.3	100.0	26 279	203	9 754	369.2	100.0	20 285	139	7 529	49 032
Under \$2,500	429	2.4	.4	.1	843	106	428	.2	.1	507	118	258	845
\$2,500 to \$4,999	1 258	6.9	5.0	1.0	3 982	25	2 360	4.7	1.3	3 710	30	2 210	2 112
\$5,000 to \$7,499	1 404	7.7	8.7	1.8	6 197	26	3 067	8.2	2.2	5 814	39	2 897	2 817
\$7,500 to \$9,999	1 121	6.2	9.7	2.0	8 685	28	4 206	8.9	2.4	7 946	38	3 649	2 314
\$10,000 to \$12,499	1 181	6.5	13.2	2.8	11 197	29	5 163	11.8	3.2	10 008	39	4 615	2 581
\$12,500 to \$14,999	954	5.2	13.1	2.7	13 694	30	6 011	11.4	3.1	11 895	57	5 222	2 174
\$15,000 to \$17,499	1 088	6.0	17.6	3.7	16 137	30	6 733	14.9	4.0	13 708	53	5 720	2 608
\$17,500 to \$19,999	907	5.0	16.9	3.5	18 686	30	7 431	14.2	3.8	15 614	64	6 216	2 277
\$20,000 to \$22,499	1 043	5.7	22.0	4.6	21 131	31	7 731	18.0	4.9	17 227	76	6 302	2 850
\$22,500 to \$24,999	840	4.6	19.9	4.2	23 689	31	8 444	16.1	4.4	19 134	74	6 826	2 354
\$25,000 to \$27,499	940	5.2	24.5	5.1	26 091	31	8 992	19.5	5.3	20 739	74	7 148	2 727
\$27,500 to \$29,999	743	4.1	21.3	4.5	28 649	33	9 047	18.9	4.6	22 906	86	7 202	2 353
\$30,000 to \$32,499	755	4.1	23.4	4.9	31 062	37	10 147	18.3	5.0	24 243	84	7 920	2 310
\$32,500 to \$34,999	622	3.4	20.9	4.4	33 643	38	10 959	16.2	4.4	26 123	112	8 509	1 908
\$35,000 to \$37,499	595	3.6	25.1	5.3	38 128	36	11 597	19.2	5.2	27 616	112	8 864	2 166
\$37,500 to \$39,999	505	2.8	19.6	4.1	38 747	41	12 351	14.9	4.0	29 487	125	9 393	1 583
\$40,000 to \$44,999	962	5.3	40.5	8.5	42 100	60	12 426	30.6	8.3	31 825	105	9 393	3 259
\$45,000 to \$49,999	674	3.7	31.8	6.7	47 192	72	13 717	23.8	6.4	35 251	127	10 246	2 320
\$50,000 to \$59,999	881	4.8	47.7	10.0	54 169	128	15 401	34.9	9.4	39 575	182	11 252	3 099
\$60,000 to \$74,999	630	3.5	42.0	8.8	66 584	225	18 035	30.1	8.2	47 773	253	12 940	2 327
\$75,000 and over	569	3.1	55.0	11.5	96 644	1 209	26 586	36.6	9.9	64 261	755	17 683	2 067
Median income	21 818	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Standard error	211	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Midwest²													
Total	21 456	100.0	536.2	100.0	24 990	182	9 207	419.6	100.0	19 558	124	7 206	58 234
Under \$2,500	590	2.7	.1	-	123	167	61	-	-	99	173	49	1 201
\$2,500 to \$4,999	1 355	6.3	5.3	1.0	3 878	25	2 088	5.0	1.2	3 678	27	1 961	2 516
\$5,000 to \$7,499	1 520	7.1	9.3	1.7	6 132	25	2 979	8.8	2.1	5 793	28	2 814	3 129
\$7,500 to \$9,999	1 316	6.1	11.5	2.1	8 721	26	3 924	10.7	2.5	8 109	32	3 649	2 925
\$10,000 to \$12,499	1 501	7.0	16.8	3.1	11 191	25	4 840	15.1	3.6	10 049	35	4 346	3 470
\$12,500 to \$14,999	1 313	6.1	18.0	3.4	13 721	27	5 677	15.8	3.8	12 064	45	4 992	3 173
\$15,000 to \$17,499	1 352	6.3	21.8	4.1	16 163	27	6 740	18.7	4.5	13 855	51	5 778	3 241
\$17,500 to \$19,999	1 201	5.6	22.4	4.2	18 691	27	7 099	19.0	4.5	15 792	56	5 998	3 161
\$20,000 to \$22,499	1 369	6.3	28.7	5.4	21 158	27	7 849	23.8	5.7	17 483	64	6 486	3 682
\$22,500 to \$24,999	1 101	5.1	26.1	4.9	23 676	27	8 341	21.2	5.1	19 273	65	6 789	3 126
\$25,000 to \$27,499	1 188	5.5	31.0	5.8	26 094	30	8 541	24.8	5.9	20 887	65	6 837	3 630
\$27,500 to \$29,999	851	4.0	24.4	4.8	28 714	33	9 416	19.3	4.6	22 674	77	7 436	2 596
\$30,000 to \$32,499	1 025	4.8	31.9	8.0	31 132	32	10 127	24.9	5.9	24 331	75	7 914	3 152
\$32,500 to \$34,999	649	4.0	28.6	5.3	33 696	31	10 483	22.4	5.3	26 328	88	8 191	2 730
\$35,000 to \$37,499	696	3.2	25.1	4.7	36 087	38	11 317	19.3	4.6	27 660	89	8 674	2 220
\$37,500 to \$39,999	651	2.6	21.3	4.0	38 693	41	12 229	16.3	3.9	29 647	116	9 370	1 745
\$40,000 to \$44,999	1 035	4.8	43.6	8.1	42 167	59	12 572	33.2	7.9	32 116	96	9 575	3 471
\$45,000 to \$49,999	664	3.1	31.4	5.9	47 304	74	14 212	23.5	5.6	35 327	127	10 814	2 210
\$50,000 to \$59,999	918	4.3	49.7	9.3	54 206	124	15 860	36.8	8.8	40 137	140	11 743	3 137
\$60,000 to \$74,999	561	2.6	37.3	7.0	66 458	252	18 969	26.9	6.4	47 841	246	13 656	1 967
\$75,000 and over	509	2.4	51.6	9.8	101 333	1 895	29 112	34.2	8.2	67 240	970	19 318	1 771
Median income	21 088	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Standard error	179	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)

¹Persons of Spanish origin may be of any race.

²Formerly the North Central Region.

Table 2. All Households, Aggregate Income, Mean Income, Income per Household Member (After Taxes), and Number of Persons in Households, by After-Tax Money Income Levels and Selected Characteristics: 1983—Con.

(Households as of March 1984. For meaning of symbols, see text)

After-tax money income level and characteristic	All households		Aggregate income		Mean income		Income per household member (dollars)	Total number of persons in households (thousands)
	Number (thousands)	Percent distribution	Amount (billions of dollars)	Percent distribution	Value (dollars)	Standard error (dollars)		
RACE AND SPANISH ORIGIN OF HOUSEHOLDER—CON.								
Spanish Origin¹								
Total	4 326	100.0	69.5	100.0	16 076	271	4 662	14 915
Under \$2,500	188	4.3	.2	.3	996	159	372	504
\$2,500 to \$4,999	377	8.7	1.5	2.1	3 906	55	1 551	951
\$5,000 to \$7,499	524	12.1	3.3	4.7	6 213	48	2 219	1 466
\$7,500 to \$9,999	440	10.2	3.8	5.5	8 702	54	2 638	1 451
\$10,000 to \$12,499	430	9.9	4.8	7.0	11 279	54	3 370	1 437
\$12,500 to \$14,999	417	9.6	5.7	8.3	13 790	57	3 901	1 473
\$15,000 to \$17,499	352	8.1	5.7	8.2	16 235	61	4 490	1 274
\$17,500 to \$19,999	329	7.6	6.2	8.9	18 769	62	5 228	1 182
\$20,000 to \$22,499	261	6.0	5.5	7.9	21 117	68	5 181	1 065
\$22,500 to \$24,999	209	4.8	5.0	7.2	23 770	74	6 273	793
\$25,000 to \$27,499	170	3.9	4.4	6.4	26 202	91	6 961	639
\$27,500 to \$29,999	154	3.6	4.4	6.4	28 662	91	6 878	645
\$30,000 to \$32,499	94	2.2	2.9	4.2	31 106	120	7 724	380
\$32,500 to \$34,999	89	2.1	3.0	4.3	33 788	126	8 306	361
\$35,000 to \$37,499	73	1.7	2.6	3.8	(B)	(B)	(B)	300
\$37,500 to \$39,999	41	.9	1.6	2.3	(B)	(B)	(B)	184
\$40,000 to \$44,999	70	1.6	2.9	4.2	(B)	(B)	(B)	311
\$45,000 to \$49,999	50	1.2	2.4	3.4	(B)	(B)	(B)	223
\$50,000 to \$59,999	37	.9	2.0	2.9	(B)	(B)	(B)	169
\$60,000 to \$74,999	17	.4	1.1	1.6	(B)	(B)	(B)	95
\$75,000 and over	3	.1	.3	.4	(B)	(B)	(B)	13
Median income	13 725	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Standard error	307	(X)	(X)	(X)	(X)	(X)	(X)	(X)
REGION								
Northeast								
Total	18 199	100.0	369.2	100.0	20 285	139	7 529	49 032
Under \$2,500	518	2.8	.3	.1	631	117	326	1 003
\$2,500 to \$4,999	1 368	7.5	5.4	1.5	3 930	23	2 372	2 266
\$5,000 to \$7,499	1 564	8.6	9.8	2.6	6 237	24	3 124	3 122
\$7,500 to \$9,999	1 375	7.6	12.1	3.3	8 785	25	4 196	2 873
\$10,000 to \$12,499	1 446	8.0	16.3	4.4	11 230	25	5 114	3 180
\$12,500 to \$14,999	1 376	7.6	19.0	5.1	13 778	25	5 830	3 253
\$15,000 to \$17,499	1 349	7.4	21.9	5.9	16 240	25	6 218	3 525
\$17,500 to \$19,999	1 300	7.1	24.4	6.6	18 757	26	6 728	3 624
\$20,000 to \$22,499	1 213	6.7	25.8	7.0	21 258	27	6 984	3 691
\$22,500 to \$24,999	1 083	6.0	26.0	7.0	23 757	28	7 741	3 356
\$25,000 to \$27,499	917	5.0	24.0	6.5	26 167	31	8 437	2 843
\$27,500 to \$29,999	904	5.0	25.9	7.0	28 711	32	9 000	2 883
\$30,000 to \$32,499	676	3.7	21.1	5.7	31 215	36	9 596	2 200
\$32,500 to \$34,999	644	3.5	21.7	5.9	33 694	39	10 278	2 110
\$35,000 to \$37,499	510	2.8	18.4	5.0	36 104	40	10 516	1 751
\$37,500 to \$39,999	364	2.0	14.1	3.8	38 667	50	10 583	1 328
\$40,000 to \$44,999	496	2.7	21.1	5.7	42 309	87	11 837	1 779
\$45,000 to \$49,999	352	1.9	16.7	4.5	47 359	103	12 328	1 354
\$50,000 to \$59,999	417	2.3	22.6	6.1	54 171	169	13 460	1 678
\$60,000 to \$74,999	214	1.2	14.1	3.8	65 766	339	17 519	802
\$75,000 and over	100	.6	8.8	2.4	87 856	1 671	21 407	412
Median income	17 695	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Standard error	169	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Midwest²								
Total	21 456	100.0	419.6	100.0	19 558	124	7 206	58 234
Under \$2,500	663	3.1	.1	-	105	159	52	1 352
\$2,500 to \$4,999	1 509	7.0	5.9	1.4	3 879	23	2 114	2 768
\$5,000 to \$7,499	1 806	7.5	10.0	2.4	6 200	24	2 981	3 340
\$7,500 to \$9,999	1 756	8.2	15.4	3.7	8 788	23	3 953	3 894
\$10,000 to \$12,499	1 656	8.6	20.9	5.0	11 267	22	5 021	4 164
\$12,500 to \$14,999	1 661	7.7	22.8	5.4	13 737	24	5 548	4 113
\$15,000 to \$17,499	1 781	8.3	28.9	6.9	16 201	23	6 238	4 627
\$17,500 to \$19,999	1 783	8.2	33.0	7.9	18 736	23	6 624	4 988
\$20,000 to \$22,499	1 513	7.0	32.1	7.6	21 208	25	6 938	4 624
\$22,500 to \$24,999	1 415	6.6	33.5	8.0	23 714	25	7 686	4 364
\$25,000 to \$27,499	1 159	5.4	30.4	7.2	26 224	28	8 279	3 671
\$27,500 to \$29,999	942	4.4	27.1	6.4	28 721	31	8 786	3 081
\$30,000 to \$32,499	779	3.6	24.3	5.8	31 171	34	9 733	2 495
\$32,500 to \$34,999	639	3.0	21.6	5.1	33 748	39	9 849	2 191
\$35,000 to \$37,499	468	2.2	17.0	4.0	36 264	42	10 358	1 640
\$37,500 to \$39,999	429	2.0	16.6	4.0	38 730	45	11 271	1 475
\$40,000 to \$44,999	541	2.5	22.9	5.4	42 253	61	12 208	1 673
\$45,000 to \$49,999	291	1.4	13.8	3.3	47 311	115	12 398	1 110
\$50,000 to \$59,999	354	1.7	19.2	4.6	54 331	187	14 878	1 294
\$60,000 to \$74,999	237	1.1	15.7	3.7	66 236	359	18 669	841
\$75,000 and over	93	.4	8.6	2.0	92 450	3 143	26 056	330
Median income	17 355	(X)	(X)	(X)	(X)	(X)	(X)	(X)
Standard error	136	(X)	(X)	(X)	(X)	(X)	(X)	(X)

¹Persons of Spanish origin may be of any race.

²Formerly the North Central Region.

Table 3. Mean Income of Households and Income per Household Member (Before and After Taxes), by Selected Characteristics: 1983 and 1982

(In 1983 dollars. Households as of March of the following year. An asterisk (*) preceding percent change indicates a statistically significant change at the 95-percent confidence level. For meaning of symbols, see text)

Characteristic	Mean income						Income per household member					
	Before taxes			After taxes			Before taxes			After taxes		
	1983 (dol.)	1982* (dol.)	Percent change	1983 (dol.)	1982* (dol.)	Percent change	1983 (dol.)	1982* (dol.)	Percent change	1983 (dol.)	1982* (dol.)	Percent change
All households	25 401	25 091	*1.2	20 001	19 535	*2.4	9 377	9 187	*2.1	7 383	7 153	*3.2
RACE AND SPANISH ORIGIN OF HOUSEHOLDER												
White	26 455	26 125	*1.3	20 751	20 256	*2.4	9 947	9 756	*2.0	7 803	7 565	*3.1
Black	16 531	16 254	1.7	13 673	13 386	2.1	5 534	5 340	3.6	4 577	4 398	4.1
Spanish origin ¹	19 369	19 335	.2	16 076	15 784	1.9	5 617	5 553	1.2	4 662	4 533	2.8
REGION												
Northeast	26 279	25 528	*2.9	20 285	19 530	*3.9	9 754	9 342	*4.4	7 529	7 148	*5.3
Midwest ²	24 990	24 938	.2	19 558	19 382	.9	9 207	9 143	.7	7 206	7 105	1.4
South	24 233	23 954	1.2	19 474	19 001	*2.5	8 892	8 716	*2.0	7 146	6 913	*3.4
West	26 966	26 747	.8	21 153	20 642	*2.5	10 024	9 892	1.3	7 863	7 635	*3.0
TYPE OF HOUSEHOLD												
Family households	28 844	28 450	*1.4	22 694	22 119	*2.6	8 803	8 638	*1.9	6 926	6 716	*3.1
Married-couple families:												
With no related children under 18	31 226	30 685	*1.8	24 418	23 637	*3.3	13 011	12 863	1.2	10 175	9 908	*2.7
With related children under 18	31 841	31 344	*1.6	24 824	24 188	*2.6	7 522	7 329	*2.6	5 864	5 656	*3.7
Female householder, no husband present, with related children under 18	13 015	12 976	.3	11 302	11 236	.6	3 847	3 789	1.5	3 340	3 281	1.8
All other family households	23 147	22 705	1.9	18 673	18 186	2.7	8 508	8 603	-1.1	6 863	6 891	-4
Nonfamily households	16 285	15 937	*2.2	12 870	12 487	*3.1	13 503	13 301	1.5	10 671	10 422	2.4
AGE OF HOUSEHOLDER												
15 to 24 years	15 451	16 453	*-6.1	12 833	13 403	*-4.3	6 772	7 061	-4.1	5 625	5 752	-2.2
25 to 29 years	22 210	22 322	-.5	17 679	17 499	1.0	8 243	8 426	-2.2	6 561	6 605	-.7
30 to 34 years	26 010	26 018	-	20 325	20 008	1.6	8 423	8 285	1.7	6 582	6 371	*3.3
35 to 39 years	30 184	29 025	*4.0	23 111	22 080	*4.7	8 793	8 261	*6.4	6 733	6 285	*7.1
40 to 44 years	32 954	31 832	*3.5	25 188	24 123	*4.4	9 146	8 718	*4.9	6 991	6 606	*5.8
45 to 49 years	33 858	33 124	2.2	25 870	25 012	*3.4	9 859	9 408	*4.8	7 533	7 103	*6.0
50 to 54 years	34 551	32 815	*5.3	26 166	24 663	*6.1	11 374	10 726	*6.0	8 614	8 061	*6.9
55 to 59 years	30 338	31 008	-2.2	23 051	23 116	-3	11 840	11 900	-5	8 996	8 871	1.4
60 to 64 years	25 230	25 213	.1	19 781	19 582	1.0	11 430	11 300	1.1	8 961	8 777	2.1
65 years and over	16 386	16 379	-	14 307	14 139	1.2	9 292	9 334	-4	8 113	8 057	.7
SIZE OF HOUSEHOLD												
One person	14 162	13 772	*2.8	11 239	10 860	*3.5	14 162	13 772	*2.8	11 239	10 860	*3.5
Two persons	25 524	25 340	.7	20 176	19 710	*2.4	12 589	12 567	.2	9 951	9 775	*1.8
Three persons	29 338	28 590	*2.6	22 927	22 140	*3.6	9 609	9 398	*2.2	7 509	7 278	*3.2
Four persons	32 702	31 928	*2.4	25 419	24 547	*3.6	8 120	7 915	*2.6	6 311	6 085	*3.7
Five persons	32 382	31 975	1.3	25 524	24 991	2.1	6 431	6 341	1.4	5 069	4 956	2.3
Six persons	31 672	32 420	-2.3	25 462	25 703	-9	5 220	5 347	-2.4	4 197	4 239	-1.0
Seven persons or more	28 916	30 515	-5.2	24 096	25 027	-3.7	3 673	3 907	-6.0	3 061	3 204	-4.5
TENURE												
Owner occupied	29 647	29 114	*1.8	23 035	22 356	*3.0	10 298	10 004	*2.9	8 001	7 681	*4.2
Renter occupied, including no cash rent	17 661	17 640	.1	14 469	14 309	1.1	7 362	7 353	.1	6 031	5 964	1.1

¹Persons of Spanish origin may be of any race.

²Formerly the North Central Region.

³Revised. For further details, see text.

Table 4. Number of Poverty Households, Mean Household Income (Before and After Taxes), and Percent of Households Paying Specified Taxes: 1983

(Households as of March 1984. For meaning of symbols, see text)

Characteristic	Number ¹ (thousands)	Mean household income		Taxes as a percent of total money income	Percent of households paying—					
		Before taxes (dollars)	After taxes (dollars)		One or more taxes	Federal income taxes	State income taxes	FICA payroll taxes	Federal retirement taxes	Property taxes
Total	11 779	4 484	4 247	6.7	63.6	7.6	13.1	44.0	.6	33.7
RACE AND SPANISH ORIGIN OF HOUSEHOLDER										
White	8 417	4 373	4 102	7.8	67.9	8.2	14.1	45.6	.5	36.1
Black	3 027	4 699	4 550	4.4	52.4	5.7	10.9	39.4	.7	22.6
Spanish origin ²	1 120	5 513	5 316	5.5	58.9	10.1	5.1	51.9	.7	17.7
TYPE OF HOUSEHOLD										
Family households	7 452	5 284	5 011	7.1	69.9	7.3	14.6	55.0	.9	34.7
Married-couple families:										
With no related children under 18	1 265	3 726	3 345	10.5	77.6	5.6	8.3	38.5	.6	59.7
With related children under 18	2 534	6 927	6 525	8.5	66.9	12.8	23.3	79.0	1.2	39.8
Female householder, no husband present, with related children under 18	2 991	4 772	4 655	4.2	52.5	3.6	10.1	44.2	.9	18.0
All other family households	662	4 290	4 013	7.6	68.8	6.0	14.1	43.8	.5	42.3
Nonfamily households	4 327	3 107	2 930	5.7	52.8	8.1	10.5	24.9	.2	32.0
AGE OF HOUSEHOLDER										
15 to 24 years	1 306	3 937	3 824	4.8	65.8	10.8	16.8	61.8	.7	7.6
25 to 29 years	1 460	4 673	4 526	5.5	64.3	8.3	15.9	59.9	.5	15.4
30 to 34 years	1 284	5 268	5 038	6.7	65.3	7.6	16.7	60.2	.9	22.8
35 to 39 years	1 048	5 524	5 170	8.4	71.5	9.5	18.5	61.2	1.0	35.6
40 to 44 years	853	5 637	5 252	8.8	77.2	12.1	21.3	66.8	1.1	39.7
45 to 49 years	698	4 672	4 311	9.5	71.8	10.5	15.3	57.3	.9	41.2
50 to 54 years	592	4 471	4 142	8.6	69.2	12.0	21.5	50.5	1.3	40.5
55 to 59 years	788	3 725	3 384	9.9	68.4	12.5	15.6	43.7	.8	46.9
60 to 64 years	899	3 887	3 606	7.7	64.4	9.3	10.9	32.1	.6	48.4
65 years and over	2 899	3 920	3 751	4.4	50.2	.4	1.9	7.1	.1	45.8
NUMBER OF EARNERS										
No earners	6 101	3 780	3 646	3.5	33.5	.8	1.5	.1	—	32.5
One earner	4 063	4 811	4 517	8.5	95.0	14.8	24.0	69.5	.6	31.1
Two earners	1 336	6 056	5 602	10.4	98.6	13.8	26.2	95.1	2.7	43.3
Three earners	207	6 813	6 190	12.0	98.6	18.3	33.5	95.1	4.9	48.6
Four earners or more	71	(B)	(B)	(X)	100.0	27.0	43.7	100.0	3.1	58.0

¹The household poverty figures differ slightly from those previously published. For further details, see appendix B.

²Persons of Spanish origin may be of any race.

Table 5. Number and Percent of Households Paying Taxes, by Level of Before-Tax Money Income and Type of Tax: 1983

(Numbers in thousands. Households as of March 1984)

Before-tax money income level	All households	Households paying—											
		One or more taxes		Federal income taxes		State income taxes		FICA payroll taxes		Federal retirement taxes		Property taxes	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total	85 407	78 541	92.0	64 430	75.4	53 543	62.7	63 341	74.2	3 284	3.8	51 684	60.7
Under \$5,000 ¹	7 862	4 320	54.9	305	3.9	547	7.0	2 358	30.0	26	.3	2 004	33.1
\$5,000 to \$7,499	6 211	4 350	70.0	966	15.5	1 200	19.3	2 481	39.9	47	.8	2 501	40.3
\$7,500 to \$9,999	5 503	4 720	85.8	2 041	37.1	2 068	37.9	3 018	54.8	53	1.0	2 539	46.1
\$10,000 to \$12,499	6 002	5 610	93.5	3 824	63.7	3 170	52.8	3 834	63.9	109	1.8	2 942	49.0
\$12,500 to \$14,999	5 122	4 994	97.5	3 956	77.2	3 168	61.9	3 652	71.3	113	2.2	2 620	51.1
\$15,000 to \$17,499	5 530	5 438	98.3	4 795	86.7	3 719	67.2	4 277	77.3	170	3.1	2 918	52.8
\$17,500 to \$19,999	4 696	4 652	99.3	4 368	93.2	3 425	73.1	3 796	79.7	130	2.8	2 703	57.7
\$20,000 to \$22,499	5 045	5 035	99.8	4 908	97.3	3 904	77.4	4 214	83.5	170	3.4	3 070	60.8
\$22,500 to \$24,999	4 171	4 165	99.8	4 095	98.2	3 305	79.2	3 517	84.3	173	4.2	2 642	63.3
\$25,000 to \$27,499	4 431	4 428	99.9	4 381	98.9	3 591	81.0	3 883	87.2	220	5.0	2 985	66.9
\$27,500 to \$29,999	3 443	3 442	100.0	3 425	99.5	2 907	81.5	3 015	87.6	227	6.6	2 410	70.0
\$30,000 to \$32,499	3 670	3 668	99.9	3 659	99.7	3 012	82.1	3 360	91.5	177	4.8	2 673	72.8
\$32,500 to \$34,999	2 965	2 961	99.9	2 959	99.8	2 467	83.2	2 698	90.0	182	6.1	2 238	75.5
\$35,000 to \$37,499	2 819	2 819	100.0	2 819	100.0	2 274	80.7	2 584	92.0	171	6.1	2 121	75.2
\$37,500 to \$39,999	2 249	2 249	100.0	2 246	99.9	1 850	82.2	2 052	91.2	169	7.5	1 750	77.8
\$40,000 to \$44,999	4 018	4 018	100.0	4 010	99.8	3 358	83.6	3 722	92.6	308	7.3	3 177	79.1
\$45,000 to \$49,999	2 905	2 905	100.0	2 905	100.0	2 392	82.3	2 723	93.7	211	7.3	2 369	81.5
\$50,000 and over	8 774	8 770	100.0	8 768	99.9	7 267	82.8	8 259	94.1	630	7.2	7 641	87.1

¹Includes households with losses.

Table 6. Mean Taxes Paid and Taxes Paid as a Percentage of Mean Before-Tax Income, by Level of Before-Tax Money Income and Type of Tax: 1983

(For meaning of symbols, see text)

Before-tax money income level	One or more taxes		Federal income taxes		State income taxes		FICA payroll taxes		Federal retirement taxes		Property taxes	
	Mean tax (dollars)	Percent	Mean tax (dollars)	Percent	Mean tax (dollars)	Percent	Mean tax (dollars)	Percent	Mean tax (dollars)	Percent	Mean tax (dollars)	Percent
Total	5 889	21.7	4 077	13.0	1 075	3.5	1 561	5.3	1 588	4.4	737	2.4
Under \$5,000 ¹	365	13.1	104	2.6	44	1.3	160	5.8	(B)	(X)	436	16.1
\$5,000 to \$7,499	524	8.4	267	4.2	76	1.2	314	5.0	(B)	(X)	455	7.3
\$7,500 to \$9,999	764	8.8	412	4.7	113	1.3	448	5.1	(B)	(X)	456	5.2
\$10,000 to \$12,499	1 188	10.6	601	5.4	186	1.5	619	5.5	536	4.8	460	4.3
\$12,500 to \$14,999	1 681	12.3	861	6.3	239	1.7	749	5.5	699	5.1	541	4.0
\$15,000 to \$17,499	2 264	14.0	1 151	7.1	321	2.0	903	5.6	762	4.7	550	3.4
\$17,500 to \$19,999	2 821	15.1	1 426	7.6	409	2.2	1 038	5.6	885	4.8	555	3.0
\$20,000 to \$22,499	3 572	16.9	1 766	8.4	499	2.4	1 220	5.8	1 021	4.8	637	3.0
\$22,500 to \$24,999	4 235	17.9	2 211	9.3	604	2.5	1 347	5.7	1 180	5.0	622	2.6
\$25,000 to \$27,499	5 007	19.2	2 615	10.0	732	2.8	1 513	5.8	1 273	4.9	661	2.5
\$27,500 to \$29,999	5 568	19.4	2 942	10.3	825	2.9	1 615	5.6	1 506	5.3	646	2.3
\$30,000 to \$32,499	6 489	20.9	3 420	11.0	964	3.2	1 809	5.8	1 526	4.9	735	2.4
\$32,500 to \$34,999	7 095	21.1	3 799	11.3	1 096	3.3	1 913	5.7	1 743	5.2	735	2.2
\$35,000 to \$37,499	8 057	22.3	4 366	12.1	1 269	3.5	2 097	5.8	1 699	4.6	646	2.3
\$37,500 to \$39,999	8 858	22.4	4 797	12.4	1 379	3.8	2 201	5.7	1 657	4.3	773	2.0
\$40,000 to \$44,999	9 734	23.1	5 476	13.0	1 490	3.5	2 356	5.6	1 764	4.2	895	2.1
\$45,000 to \$49,999	11 446	24.2	6 648	14.1	1 781	3.8	2 601	5.5	1 933	4.1	922	1.9
\$50,000 and over	20 330	26.9	13 301	18.9	3 313	4.7	3 143	4.5	2 696	4.0	1 302	1.8

¹Includes households with losses.

Table 7. Total Taxes Paid and Percentage of Total Taxes Paid, by Level of Before-Tax Money Income and Type of Tax: 1983

Before-tax money income level	Total taxes paid (bil. of dol.)	Percent of total taxes paid					
		Total	Federal income taxes	State income taxes	FICA payroll taxes	Federal retirement taxes	Property taxes
Total	462.6	100.0	56.8	12.4	21.4	1.1	8.3
Under \$5,000 ¹	1.6	100.0	2.0	1.5	23.9	.2	72.3
\$5,000 to \$7,499	2.3	100.0	11.3	4.0	34.2	.5	50.0
\$7,500 to \$9,999	3.6	100.0	23.3	6.5	37.5	.5	32.1
\$10,000 to \$12,499	6.7	100.0	34.5	7.9	35.6	.9	21.2
\$12,500 to \$14,999	8.4	100.0	40.6	9.0	32.6	.9	16.9
\$15,000 to \$17,499	12.3	100.0	44.8	9.7	31.4	1.0	13.0
\$17,500 to \$19,999	13.1	100.0	47.5	10.7	29.5	.9	11.4
\$20,000 to \$22,499	18.0	100.0	48.7	10.8	28.6	1.0	10.9
\$22,500 to \$24,999	17.6	100.0	51.3	11.3	26.9	1.2	9.3
\$25,000 to \$27,499	22.2	100.0	51.7	11.9	26.4	1.3	8.8
\$27,500 to \$29,999	19.2	100.0	52.6	12.1	25.4	1.8	8.1
\$30,000 to \$32,499	23.8	100.0	52.6	12.5	25.5	1.1	8.3
\$32,500 to \$34,999	21.0	100.0	53.5	12.9	24.3	1.5	7.8
\$35,000 to \$37,499	22.7	100.0	54.2	12.7	24.0	1.3	7.9
\$37,500 to \$39,999	19.5	100.0	55.3	13.1	23.2	1.4	6.9
\$40,000 to \$44,999	39.1	100.0	56.1	12.8	22.4	1.4	7.3
\$45,000 to \$49,999	33.2	100.0	58.1	12.8	21.3	1.2	6.6
\$50,000 and over	178.3	100.0	65.4	13.5	14.6	1.0	5.6

¹Includes households with losses.

Appendix A. Methodology and Procedures

INTRODUCTION

This section describes the methodology and procedures which were developed to estimate taxes paid for the March 1984 CPS microdata files. In all, four types of taxes were simulated: 1) Federal individual income taxes, 2) State individual income taxes, 3) property taxes on owner-occupied housing, and 4) payroll taxes.

Development of the after-tax simulation procedures began with the March CPS annual demographic supplement. This microdata file contains demographic and economic information for approximately 59,000 sample households and the persons living in these households. It includes detailed information on household and family relationship; age; marital status; race and ethnicity; educational attainment; weeks and hours worked during the calendar year; occupation, industry, and class of worker of the job held longest during the calendar year; and income amounts for wages and salary, nonfarm and farm self-employment income, interest, dividends, rental income, estates and trusts, royalties, pension income, unemployment compensation, and sources of nontaxable income as described in appendix B.

The second major element in the simulation system were statistical summaries of individual income tax returns compiled by the Internal Revenue Service. These statistics are made available in the IRS publication series, Statistics of Income (SOI). Some unpublished statistical summaries from the IRS were also used to develop these procedures.

A third element was the 1983 Annual Housing Survey microdata file. This element was used to assign property taxes paid to the March CPS sample households residing in owner-occupied housing.

Finally, in order to estimate proportions of tax filers owning homes and itemizing deductions, tabulations were made from Interview No. 5 (6) of the 1979 Income Survey Development Program.

The system for estimating taxes paid and after-tax income created a modified March CPS microdata file. This file was formed by expanding the March CPS format to include variables relevant to the simulation of taxes paid. The detailed tables contained in this report were derived from this modified March CPS data file.

Federal Income Taxes

Simulation of Federal income taxes required up to four separate operations. First was the formation and classification

of tax filing units using household relationship, marital status, and dependency rules. Second, was the calculation of adjusted gross income for each of those units. Third was the simulation of amount of Federal income taxes paid. Finally, the calculation of earned income tax credits was made, when applicable.

Formation and classification of Federal income tax filing units.

A Federal tax filing "unit" was defined as any individual (or married couple) with either \$400 in self-employment income, \$1,000 in wages or salary, or a total of \$1,000 in interest, dividends, rents and royalties, estates and trusts, or pension income in 1983. These income levels were chosen because they either corresponded to tax laws or helped bring the estimated number of filing units on the CPS in line with 1983 IRS Statistics of Income (SOI) data.

The next step in the formation of Federal tax filing units was the assignment of dependency status. The algorithm for assigning dependency for each tax unit used the following rules:

- All filing primary family householders and spouses were included as dependents on their own tax returns.
- All children under age 15 who were members of the primary family were counted as dependents on the return of the family householder. Children aged 15 and over (except related subfamily members) with a total taxable income of less than \$1,000 were assigned dependency to the tax return of the primary family householder. Children aged 15 and over who were students were assigned dependency to the primary family householder regardless of income level.
- All other primary family members (except related subfamily members) with taxable income of less than \$1,000 were assigned as dependents on the tax return of the primary family householder.
- Related subfamilies having at least one Federal tax filing unit were treated separately in the same manner as primary families. Members of a related subfamily containing no Federal tax filing unit were assigned dependency to the tax return of the primary family householder.
- All unrelated subfamilies were treated in the same manner as primary families.

- Primary and secondary unrelated individuals age 15 and over were treated as dependents only on their own tax returns.

All simulated filing units were classified into one of three return types. Married couples and persons whose marital status was "married, spouse absent in Armed Forces" were assumed to file joint returns. Unmarried family householders with dependents were assumed to file head of household returns. All other persons classified as Federal tax filing units were assumed to file as single individuals.

Computation of adjusted gross income. Adjusted gross income (AGI) for each simulated tax filing unit was calculated by summing the income amounts from all taxable sources and an imputed amount for capital gains. The sources of CPS income included in AGI were wages and salaries, net farm and nonfarm self-employment income, net rental and royalty income, dividends, interest, estates and trusts, and income from private and government pensions.

Capital gains were imputed to tax filing units based on data obtained from a Statistics of Income (SOI) public use file and reports summarizing information reported on Federal tax returns. These data provide estimates of the probability that a filing unit in a given matrix cell reported capital gains and the mean amount of capital gains for that cell. The variables in this probability matrix were: level of AGI, type of return, and age of tax filer. A Monte Carlo technique was used to randomly assign capital gains: a random number (between 0 and 1) was generated for each filing unit; if that number was less than or equal to the probability of filing units in that matrix cell reporting capital gains, the mean amount of capital gains, as computed above, was added to that unit's AGI. This procedure does not control on demographic and other characteristics which might affect the allocation of this source of income.

In the calculation of adjusted gross income, a portion of unemployment compensation was also included in AGI if the sum of AGI and unemployment compensation for that tax unit exceeded \$12,000 (\$18,000 for joint returns). In these cases, the lesser of 1) the amount of unemployment compensation or 2) one-half of the difference between the sum of AGI and unemployment compensation and the income limit was included in AGI.

In 1983, married-couple filing units in which both spouses had earnings were allowed to deduct 10 percent of the earned income of the lesser-earnings spouse (to a maximum of \$3,000). This new adjustment is reflected in the 1983 tax model. In addition, payments to Individual Retirement Accounts (IRA) were simulated for the 1983 tax model. The May 1983 CPS pension supplement was used to estimate probabilities of tax-filing units contributing to IRA's and the average amounts contributed. These probabilities were then used to assign IRA contributions to individual tax-filing units on the CPS file. The IRA payments were deducted from the total income received by the tax-filing units in order to compute adjusted gross income.

Computation of taxable income and taxes paid. Taxable income was computed by subtracting the estimated allowable deductions from AGI. The first step in this process consisted of predicting which filing units itemized deductions. Homeownership was determined to be the most important variable available from the CPS for assigning itemization status to tax filers. Outlined below is a step-by-step description of the procedures used to assign itemization status.

1. A statistical match was made of the March CPS and Annual Housing Survey (AHS) data files in order to assign a monthly mortgage amount and a property tax amount to each owner-occupied unit on the March CPS file.¹
2. Probabilities of itemizing for homeowner, tax-filing units were computed by size of monthly mortgage payment from the 1979 Income Survey Development Program (ISDP) test panel. Probabilities for renters were computed by AGI level.
3. The probabilities described in step 2 were used to randomly assign itemization status within monthly mortgage (or AGI) intervals using the same Monte Carlo technique used in the assignment of capital gains.
4. The amount of itemized deductions for tax filing units was computed using a matrix showing the ratio of itemized deductions to AGI for all units by AGI interval, type of tax return, number of dependents, and presence of a home mortgage. The ratios of itemized deductions to AGI were computed using a 1980 SOI public use file and data published in the 1983 SOI report.

Next, a standard deduction was estimated for each tax filing unit by multiplying the number of exemptions by \$1,000. Taxable income was then estimated by subtracting the itemized and standard deductions from AGI. Tax liability was then computed using the appropriate tax schedule for that simulated return type.

The dependent child care credit was simulated for the 1983 Federal tax model and subtracted from the total tax liability. This credit allows tax filers to deduct a portion of child care expenses while they work or look for work. Data from the June 1982 CPS supplement were used to estimate probabilities of tax filers paying for child care.

The simulation procedures do not capture variations in proportions of income paid in taxes within AGI intervals. The proportion of income paid in taxes for households with similar AGI amounts may differ relative to factors such as race, age of household members, number of household members, and marital status. The extent to which these variations exist has not been measured, therefore, caution should be used when interpreting relatively small differences between the incomes of various subgroups of the population.

¹A detailed description of the CPS-AHS statistical match can be found later in appendix B.

Computation of the earned income tax credit. Earned income tax credits were simulated for the 1983 tax model. These tax credits were used in the calculation of net Federal tax liability and computation of after-tax household income for filing units with one or more dependent children, less than \$10,000 in AGI, and earnings between \$1 and \$10,000.

State Individual Income Taxes

There were 44 States that required payment of individual income taxes in 1983. For the purpose of this model, the definitions of tax filing units and AGI used for the estimation of Federal income taxes were also used for the simulation of State income taxes.

The amounts of State individual income taxes paid were computed by developing a model of each State's income tax regulations. Information on the State tax systems was obtained from a publication entitled *State Tax Handbook*, October 1, 1984. While every detail of each State's income tax system was not simulated, most of the important aspects were accounted for.

Property Taxes on Owner-Occupied Housing

In 1983, property taxes were estimated using a data file created by the statistical match of the March 1984 CPS and the 1983 AHS. In that statistical match, property tax amounts reported on the 1983 AHS for owner-occupied housing units were assigned to CPS households with similar characteristics (as defined by the matching variables). There was no comparable data file from the AHS for 1982. Property taxes in 1982 were estimated in a two-step process. First, the March 1982 and March 1983 CPS files were statistically matched. The March 1982 property tax amounts (those taken from the 1981 AHS) were then assigned to March 1983 CPS households.

Second, these 1981 amounts were increased based on the rate of increase between 1981 and 1982 in the Bureau of Economic Analysis's figures for residential property taxes adjusted to reflect the increase in the number of households. Property taxes paid on secondary residences such as vacation homes, could not be simulated. Also, the proportion of rent that pays the property taxes on renter-occupied housing units was not estimated.

The estimation procedures for property taxes paid by homeowners produces estimates that do not correspond precisely with those available from the AHS. These differences are mainly the result of differing universes and use of the statistical matching procedure. The published AHS estimate for property taxes is based on a universe that excludes condominiums, cooperatives, and mobile homes, the simulated universe includes these cases. In 1981, the published AHS estimate of property taxes was \$671, compared with the \$649 estimate based on the March CPS simulation.

Payroll Taxes

The Social Security payroll tax (FICA) and the Federal Employee Retirement tax were simulated using occupation of longest job and earnings data reported on the CPS. Social Security payroll taxes were calculated directly from the reported CPS earnings using the Social Security payroll tax formula for 1983. For wages and salary, the tax rate used was 6.7 percent up to a maximum of \$35,700.

The tax rate for self-employment was 9.35 percent of the amount between \$400 and \$35,700. Not all workers were assigned coverage under Social Security and, therefore, a small number were not subject to Social Security taxes. All Federal employees and specific proportions of workers in certain occupation groups were assigned noncovered status. Unpublished statistics supplied by the Social Security Administration were used to make these assignments.

Retirement taxes paid by each Federal employee were simulated by multiplying their wages and salary amount by the 7.0 percent tax rate. The identification of Federal employees was based on the class of worker of longest job as reported on the survey.²

COMPARISON OF SIMULATION RESULTS WITH DATA FROM IRS AND OTHER INDEPENDENT SOURCES

The procedures described in the preceding section were translated into a computer simulation model. Tables A-1 through A-4 in this section provide a basic evaluation of the accuracy of this model by presenting comparison of the simulation results with data from independent sources.

Number of Federal Tax Filing Units and Amount of Adjusted Gross Income

Shown in tables A-1 through A-3 are comparisons of IRS and CPS distributions of adjusted gross income and number of returns with specified income types. The 1983 CPS tax simulation yielded 96.1 million Federal tax filing units, about the same as the 1983 preliminary IRS Statistics of Income figure of 96.3 million. The CPS simulated aggregate adjusted gross income was \$1,950.4 billion, which was not significantly different from the preliminary IRS figure of \$1,950.8 billion. While the CPS and IRS adjusted gross income amounts are not significantly different, there are major differences in the components of total adjusted gross income. Although the IRS data indicate a larger amount of wages and salary income and interest income than the CPS, the CPS recorded signifi-

²According to the National Income and Product Accounts published by the Bureau of Economic Analysis (BEA), neither Social Security (FICA) nor Federal Employee Retirement payments are treated as taxes. Instead, they are both included under Federal Government receipts as "Contributions for Social Insurance." We have included them under the broad heading of taxes here for convenience as both are mandatory deductions from gross earnings.

Table A-1. Comparison of IRS and CPS Simulated Number of Federal Individual Tax Returns, by Type of Return and Number of Exemptions: 1983

(Numbers in thousands)

Type of return	Number of returns		Total exemptions	
	CPS	IRS	CPS	IRS
Total returns.....	96,106	96,294	225,836	234,366
Married returns, total.....	47,465	47,420	159,909	163,317
Married, filing jointly.....	47,465	46,492	159,909	161,688
Married, filing separately ¹	(NA)	928	(NA)	1,629
Head of household returns, total.....	6,941	8,842	18,521	23,661
Surviving spouse returns ¹	(NA)	130	(NA)	352
Other head of household returns.....	6,941	8,712	18,521	23,309
Single returns.....	41,699	40,032	47,406	47,387

NA Not available.

¹Not a separate filing unit type in the CPS simulation model.

cantly larger amounts of self-employment and pension income. Larger total amounts of self-employment income by the CPS can be attributed to the far fewer number of losses reported in the survey than on tax returns. The reasons for these differences are not fully understood. The larger amount of pension income from the CPS probably occurs because the IRS aggregate is based on the taxable amount of the pension while the CPS figure is based on the entire pension amount.

Number of Federal Taxable Returns and Amount of Taxable Income

The 1983 CPS simulation estimated 77.7 million Federal tax filing units with taxable income (after credits). This estimate is not significantly different from the IRS preliminary figure of 78.0 million. (See table A-4.)

Table A-2. Comparison of IRS and CPS Simulated Number of Federal Individual Income Tax Returns, by Adjusted Gross Income: 1983

(Numbers in thousands)

Adjusted gross income	Number of returns		Percent difference
	CPS	IRS	
Total.....	96,106	96,294	-0.2
Under \$2,000.....	6,050	6,949	*-12.9
\$2,000 to \$3,999.....	8,375	7,328	*14.3
\$4,000 to \$5,999.....	6,622	6,913	-4.2
\$6,000 to \$7,999.....	6,131	6,717	*-8.7
\$8,000 to \$9,999.....	5,610	6,623	*-15.3
\$10,000 to \$11,999.....	5,717	5,949	-3.9
\$12,000 to \$14,999.....	7,950	7,957	-0.1
\$15,000 to \$19,999.....	11,133	10,808	3.0
\$20,000 to \$24,999.....	9,182	8,854	3.7
\$25,000 to \$29,999.....	7,774	7,348	*5.8
\$30,000 to \$39,999.....	10,359	10,446	-0.8
\$40,000 to \$49,999.....	5,419	5,145	5.3
\$50,000 to \$74,999.....	4,053	3,608	*12.3
\$75,000 and over.....	1,730	1,649	4.9

*Significant at the 95-percent confidence level.

Table A-3. Comparison of IRS and CPS Simulated Number of Federal Individual Income Tax Returns and Aggregate Adjusted Gross Income, by Type of Income: 1983

(Numbers in thousands and aggregate adjusted gross income in billions of dollars)

Type of income	Number of returns		Aggregate adjusted gross income			
	CPS	IRS	CPS		IRS	
			Amount	Percent distribution	Amount	Percent distribution
Total AGI.....	96,106	96,294	1,950.4	100.0	1,950.8	100.0
Wages and salary.....	81,745	83,326	1,613.6	82.7	1,651.7	84.7
Nonfarm self-employment.....	9,309	10,678	120.4	6.2	58.8	3.0
Farm self-employment.....	1,784	2,712	11.1	0.6	-8.6	-0.4
Interest.....	59,750	57,138	97.8	5.0	152.9	7.8
Dividends, rents, royalties, and estates or trusts.....	15,181	(NA)	48.8	2.5	50.5	2.6
Pensions.....	11,204 ¹	10,117	79.5 ¹	4.1	70.1	3.6
Other income minus adjustments....	(NA)	(NA)	-20.8	-1.1	-24.6	-1.3

NA Not available.

¹Includes nontaxable pensions or the nontaxable portions of pensions.

Table A-4. Comparison of IRS and CPS Simulated Number of Taxable Returns, Federal Income Tax, and Income Taxes Paid as a Percent of Adjusted Gross Income: 1983

(Numbers in thousands and taxes in billions of dollars)

Adjusted gross income	Number of taxable returns			Federal income tax after credits		Federal income taxes as a percent of adjusted gross income	
	CPS	IRS	Percent difference	CPS	IRS	CPS	IRS
Total.....	77,670	78,036	-0.5	266.5	274.1	13.7	14.1
Under \$4,000 ¹	1,121	2,256	*-50.3	-	0.2	-	2.7
\$4,000 to \$5,999 ¹	4,243	4,593	*-7.6	0.7	0.8	2.1	2.4
\$6,000 to \$7,999.....	4,359	4,724	*-7.7	1.7	1.9	3.9	4.0
\$8,000 to \$9,999.....	4,899	5,734	*-14.6	2.8	3.3	5.5	5.5
\$10,000 to \$11,999.....	5,551	5,653	-1.8	4.3	4.5	7.0	6.9
\$12,000 to \$14,999.....	7,857	7,713	1.9	8.9	8.7	8.5	8.1
\$15,000 to \$19,999.....	11,125	10,617	*4.8	19.3	18.3	10.0	9.8
\$20,000 to \$24,999.....	9,182	8,741	*5.0	23.5	22.0	11.5	11.1
\$25,000 to \$29,999.....	7,774	7,292	*6.6	25.9	24.3	12.2	12.1
\$30,000 to \$39,999.....	10,359	10,375	-0.2	48.8	47.9	13.7	13.3
\$40,000 to \$49,999.....	5,419	5,121	5.8	38.5	34.8	16.0	15.2
\$50,000 to \$74,999.....	4,053	3,584	*13.1	46.0	38.3	19.1	18.0
\$75,000 and over.....	1,730	1,633	5.9	46.1	69.3	25.4	28.6

*Significant at the 95-percent confidence level.

¹Single returns with AGI less than \$3,300 and joint returns with AGI less than \$5,400 were not considered taxable under the CPS simulation, even though a small percentage of those returns do incur a tax liability.

While, overall, there are relatively small differences between the simulated CPS number of taxable returns, there are significant differences in many of the AGI intervals as shown in table A-4. The smaller number of returns in the "Under \$4,000" category for the CPS (about 50 percent less) results mainly because the procedures did not simulate tax returns for dependents specifically.

Amount of Federal Income Taxes Paid (Net Tax Liability)

According to the CPS simulation, the total amount of Federal individual income taxes paid in 1983 was \$266.5 billion, about 14 percent of the estimated CPS adjusted gross income. (See table A-4.) This estimate is not significantly different from the IRS total of \$274.1 billion in net tax liability (after credits) for 1983. Overall, the IRS and CPS proportion of taxes paid by adjusted gross income level are quite similar as indicated in table A-4.

State Income Taxes Paid

The CPS tax simulation yielded \$57.6 billion in State income taxes paid in 1983. According to the Bureau of the Census publication entitled "Quarterly Summary of State and Local Tax Revenue: October-December 1983," the net amount of individual income taxes collected by the States during calendar year 1983 was \$53.5 billion. The over-estimation of State income taxes paid by the CPS tax simulation can be attributed to several factors. First, the simulation

did not account for every detail of each State's income tax regulations. Second, the simulation did not include various State tax credits and exemptions which could not be computed from the data available on the March CPS file; these included credits for home energy-saving expenditures, and charitable contributions.

Payroll Taxes

According to the simulation, Social Security payroll taxes totaled \$98.9 billion in 1983. This estimate is not significantly different from the aggregate amount of \$99.2 billion according to figures from the Social Security Administration. Based on administrative statistics from the Office of Personnel Management, Federal retirement taxes totaled \$4.5 billion in 1983. The comparable figure from the tax simulation model was somewhat higher, \$5.2 billion. The higher estimate of Federal retirement tax may have occurred because the CPS wage and salary figure represents the amount received from all jobs, not just Federal employment. Also, there are a number of noncontributory retirement programs within the Federal system which could not be simulated and a small number of employees not covered by any Federal retirement program.

Amount of Property Taxes

The simulation produced an estimated \$38.2 billion in property taxes for 1983. This compares with the \$37.0 billion figure published in the National Income Accounts by the Bureau of Economic Analysis (BEA).

Appendix B. Definitions and Explanations

Population coverage. This report includes the civilian noninstitutional population of the United States (the 50 States and the District of Columbia) and members of the Armed Forces living off post or with their families on post, but excludes all other members of the Armed Forces.

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

A household includes the related family members and all the unrelated persons, if any, such as lodgers, foster children, wards, or employees who share the housing unit. A person living alone in a housing unit or a group of unrelated persons sharing a housing unit as partners is also counted as a household. The count of households excludes group quarters.

Money income before taxes. The before-tax money income distributions and income summary measures (such as medians and means) shown in this report are limited to money income before payment of Federal, State, local, or Social Security (FICA) taxes and before any other types of deductions, such as union dues and Medicare premiums. Total money income before taxes is the sum of the amounts received from wages and salaries, self-employment income (including losses), Social Security, Supplemental Security Income, public assistance, interest, dividends, rent, royalties, estates or trusts, veterans' payments, unemployment and workers' compensations, private and government retirement and disability pensions, alimony, child support, and any other source of money income which was regularly received. Capital gains (or losses) and lump sum or one-time payments such as life insurance settlements are excluded.

Money income after taxes. To compute the after-tax money income distributions and summary measures shown in this report, simulated Federal and State income taxes, Social Security (FICA) taxes, and property taxes were deducted from total money income before taxes as defined above. Total money income after taxes also includes capital gains, which

were imputed to some households during the Federal income tax simulation.

Underreporting. As in most household surveys, the estimates of the number of money income recipients and the total amount of money income derived from the March CPS are somewhat less than comparable estimates derived from independent sources, such as the Bureau of Economic Analysis, Social Security Administration, and Veterans Administration. The difference between the survey estimate and the independent estimate is generally termed "underreporting." Underreporting tends to be more pronounced for income sources such as public assistance and welfare, unemployment compensation, and property income (interest, dividends, and net rental income). Estimates of income from wages and salaries tend to have less underreporting than most income types. For 1983 (the latest year for which estimates of underreporting are available), underreporting of total money income was about 10 percent. For further details concerning the reporting of money income, see appendix D.

Poverty definition. Families and unrelated individuals are classified as being above or below the poverty level using the poverty index originated at the Social Security Administration in 1964 and revised by Federal Interagency Committees in 1969 and 1980. The poverty index is based solely on money income and does not reflect the fact that many low-income persons receive noncash benefits such as food stamps, Medicaid, and public housing. The index is based on the Department of Agriculture's 1961 Economy Food Plan and reflects the different consumption requirements of families based on their size and composition. It was determined from the Department of Agriculture's 1955 Survey of Food Consumption that families of three or more persons spend approximately one-third of their income on food; the poverty level for these families was, therefore, set at three times the cost of the economy food plan. For smaller families and persons living alone, the cost of the economy food plan was multiplied by factors that were slightly higher in order to compensate for the relatively larger fixed expenses of these smaller households. The poverty thresholds are updated every year to reflect changes in the Consumer Price Index (CPI). The average poverty threshold for a family of four was \$10,178 in 1983, about 3.2 percent higher than the comparable 1982 cutoff of \$9,862. Weighted average poverty thresholds by size of family are shown in table B-1. For further details, see Current Population Reports, Series P-60, No. 147.

Table B-1. Weighted Average Poverty Thresholds in 1983

Size of family unit	Threshold
One person (unrelated individual)..	\$ 5,061
15 to 64 years.....	5,180
65 years and over.....	4,775
Two persons.....	6,483
Householder 15 to 64 years.....	6,697
Householder 65 years and over....	6,023
Three persons.....	7,938
Four persons.....	10,178
Five persons.....	12,049
Six persons.....	13,630
Seven persons.....	15,500
Eight persons.....	17,170
Nine persons or more.....	20,310

Differences in after-tax poverty concept. In previous reports households have been classified according to the poverty status of the household's primary family or individual. Using this method for determining poverty status, it is possible for households classified as below the poverty level to have total household incomes above the poverty level based on the inclusion of income received by unrelated subfamilies or secondary individuals. The presence of these high-income "poverty" households was thought to be inappropriate for the purpose of this study. Consequently, the poverty universe for this study was modified to exclude households in which the total household income exceeded the poverty threshold for the primary family or individual. This modification resulted in a decline in the number of poverty households from 12,484,000 to 11,779,000 for 1983.

AHS-CPS statistical match. In order to simulate property taxes for owner-occupied housing units, the March 1984 CPS simulation file was statistically matched to a file from the 1983 Annual Housing Survey (AHS). Since the AHS file contained responses to questions on annual property tax expenses the statistical match allowed the transfer of property tax amounts to CPS records when a CPS and AHS household were found to have similar characteristics. The group of variables used to match the two files were: age of householder, tenure, public or subsidized housing status, SMSA and central-city status of the household, household income, household size, number of living quarters, and the race, sex, and educational attainment of the householder. Using a very detailed combination of recodes based on the above variables, the two

files were matched. If there was no AHS household with the exact combination of characteristics as a particular CPS household, a match was then attempted at a new level that did not have quite as much detail. This was repeated until a match was found for every CPS household.

Households on the AHS file that did not answer the question dealing with property tax expenses were ineligible for the match. Since monthly mortgage expenses, which were used to simulate itemization status for Federal taxpayers, were also assigned to CPS households using this match, households that did not answer the AHS questions on that subject were similarly excluded from the match.

Index of income concentration. The index of income concentration (or Gini index) is a statistical measure of income inequality ranging from 0 to 1. A measure of 1 indicates perfect inequality, i.e., one person having all the wealth and the rest having none. A measure of 0 indicates perfect equality, i.e., all persons having equal shares of the wealth. For a more detailed discussion see Current Population Reports, Series P-60, No. 123.

Table B-2. Annual Average Consumer Price Index (CPI): 1947 to 1983

(1977 = 100)

Year	CPI	Year	CPI
1947.	36.9	1966.	53.6
1948.	39.7	1967.	55.1
1949.	39.3	1968.	57.4
1950.	39.7	1969.	60.5
1951.	42.9	1970.	64.1
1952.	44.6	1971.	66.8
1953.	44.1	1972.	69.0
1954.	44.4	1973.	73.3
1955.	44.2	1974.	81.4
1956.	44.8	1975.	88.8
1957.	46.4	1976.	93.9
1958.	47.7	1977.	100.0
1959.	48.1	1978.	107.6
1960.	48.9	1979.	119.8
1961.	49.4	1980.	136.0
1962.	49.9	1981.	150.1
1963.	50.2	1982.	159.3
1964.	51.2	1983.	164.4
1965.	52.1		

Source: Department of Labor, Bureau of Labor Statistics.

Appendix C. Source and Reliability of Estimates

SOURCE OF DATA

Data from the Annual Housing Survey (AHS), the Income Survey Development Program, and the Internal Revenue Service were combined with Current Population Survey (CPS) data to create simulations of taxes paid, number of tax filing units, adjusted gross income, and other tax characteristics for the March 1983 and 1984 CPS. See the section of the report entitled "Methodology and Procedures" for more details. In addition, unpublished data from the Social Security Administration, administrative data from the Office of Personnel Management, data from the National Income Accounts prepared by the Bureau of Economic Analysis, and Bureau of the Census publication "Quarterly Summary of State and Local Tax Revenue: October-December 1983" have all been referenced. Following is a description of the sources of data from which the tax simulations were made. Except for the CPS, these descriptions are brief. Additional information about these data sources can be found in the reports referenced in the brief descriptions given below.

Annual Housing Survey. Housing data are collected by the Bureau of the Census acting as collecting agent for the Department of Housing and Urban Development. The population covered by the sample for the AHS are all housing units in the United States. A structure must meet specific criteria developed by the Bureau of the Census before it is termed a "housing unit." For a more detailed description of the sample design, see the report "Annual Housing Survey: 1983, Part C, Financial Characteristics of the Housing Inventory, Current Housing Reports, Series H-150-83, U.S. Department of Commerce." The AHS was not conducted in 1982; therefore, property tax estimates for 1982 are based on the 1981 AHS. A series of statistical matches were made and estimates were updated to reflect changes between 1981 and 1982. Since the procedures used to obtain estimates for 1982 and 1983 differ, caution should be used in comparing year-to-year changes in property taxes. A more detailed description of this procedure can be found in appendix A.

Income Survey Development Program. The Income Survey Development Program (ISDP) was the research and development phase for the Survey of Income and Program Participation (SIPP). The ISDP was intended to examine and resolve design, operational, and technical issues for SIPP. The household sample for the 1979 ISDP was a nationwide

multiple frame sample. The majority of sample households was drawn from addresses contacted in the 1976 Survey of Income and Education. The remainder of sample households was drawn from a reserve file of sample cases maintained by the Census Bureau. For a more detailed description of this sample design, see the report *Wage and Salary Data from the Income Survey Development Program: 1979 (Preliminary Data from Interview Period One)*, Current Population Reports, Special Studies, Series P-23, No. 118.

Internal Revenue Service data. Much of the Internal Revenue Service (IRS) data in this report comes from the Statistics of Income (SOI) series, in particular, SOI Bulletin: Winter 1984-85, *Individual Income Tax Returns, Preliminary Data: 1983*. This report, based on a sample drawn from all tax returns filed through September 1984, presents information on tax payers' income, exemptions, deductions, credits, and tax.

Current Population Survey. The CPS estimates in this report are based on data obtained during the month of March in the years 1983 and 1984 from the Current Population Survey of the Bureau of the Census and from supplementary questions to the CPS. The monthly CPS deals mainly with labor force data for the civilian noninstitutional population. In addition, supplementary questions are asked every March about money income and work experience for the previous year. In order to obtain more reliable data for the Spanish-origin population, the March CPS sample was enlarged to include all households from the previous November sample which contained at least one sample person of Spanish origin. For this report, persons in the Armed Forces living off post or with their families on post are included.

The present CPS sample was initially selected from the 1970 census files with coverage in all 50 States and the District of Columbia. The sample is continually updated to reflect new construction. The Spanish supplemental sample adds about 2,500 eligible households. During the data collection period, the CPS sample was located in 629 areas comprising 1,148 counties, independent cities, and minor civil divisions in the Nation. In this sample, approximately 59,500 occupied households (excluding the supplemental Spanish) were eligible for interview each month. About 4 percent of the occupied units were visited but interviews were not obtained because the occupants were not found at home after repeated calls or were unavailable for some other reason.

The estimation procedure used in the CPS involves the inflation of the weighted sample results to independent estimates of the total civilian noninstitutional population of the United States by age, race, and sex. These independent estimates are based on statistics from decennial censuses of population; statistics on births, deaths, immigration, and emigration; and statistics on the strength of the Armed Forces. The independent population estimates used in this report to obtain data for 1982 and 1983 are based on the 1980 decennial census. The estimation procedure for the data in the report also involves a further adjustment so that the husband and wife of a household receive equal weights. Simulation techniques were used to obtain estimates of after-tax income based on CPS data. For more details on this procedure, see the section of this report entitled "Methodology and Procedures."

RELIABILITY OF ESTIMATES

Estimates based on a sample may differ somewhat from the figures that would have been obtained if a complete census had been taken using the same questionnaire, instructions, and enumerators. There are two types of errors possible in an estimate based on a sample survey: sampling and non-sampling. 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.

In addition, these standard errors are not entirely applicable to estimates from the CPS simulation. These standard errors were computed from CPS data alone and do not reflect any sampling or nonsampling errors present in data from other sources or any other errors due to the simulation process. There are no data available on the size of these additional error sources. Thus, care must be used in interpreting estimates from the CPS simulation.

Nonsampling variability. Nonsampling error is present in both the CPS and other surveys mentioned in this report. The interaction of nonsampling errors when combining data from many surveys may result in an additional component of error. An unknown component is also introduced by the use of the mathematical model. The total extent of these additional errors is unknown. Particular caution should be used in drawing conclusions based on small differences.

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 on the part of the respondents to provide correct information, errors made in collection, such as in recording or coding the data, errors made in processing the data, errors 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 with the level of the 1980 decennial census, is about 7 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 Black and other races combined than for Whites. Ratio estimation to independent age-sex-race population controls 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 decennial census.

In most cases, the questionnaire entries for income are based on the memory or knowledge of one person, usually the wife. The memory factor in data derived from field surveys of income probably produces underestimates because the tendency is to forget minor or irregular sources of income. Other errors of reporting are due to misrepresentation or to misunderstanding as to the scope of the income concept. See also appendix D entitled "Underreporting of Income."

For additional information on nonsampling error including the possible impact on CPS 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 with other data. Data obtained from the CPS and other governmental sources are not entirely comparable. This is due in large part to differences in interviewer training and experience and in differing survey procedures. This is an additional component of error not reflected in the standard error tables. Also, because data from CPS simulations used in this report were derived using statistics from other governmental agencies, the standard error tables are analogously not entirely applicable to data from the CPS simulations. Therefore, caution should be used when using the standard error tables to compare data from the CPS or CPS simulation versus data from other governmental agencies.

Sampling variability. The standard errors given in tables C-1 through C-4 are primarily measures of sampling variability, that is, of the variation that occurred by chance because a sample rather than the entire population was surveyed. The sample estimate and its standard error enable one to construct confidence intervals, ranges that would include the average result of all possible samples with a known probability. For example, if all possible samples were selected, each of these being 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:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples.
2. Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples.
3. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average result of all possible samples.

The average estimate derived from all possible samples is or is not contained in any particular computed interval. However, for a particular sample, one can say with a specified confidence that the average estimate derived from all possible samples is included in the confidence interval.

Standard errors may also be used to perform hypothesis testing, a procedure for distinguishing between population parameters using sample estimates. The most common types of hypotheses are 1) the population parameters are identical or 2) they are different. An example of this would be comparing the mean annual income of men versus the mean annual income of women. Tests may be performed at various levels of significance, where a level of significance is the probability of concluding that the parameters are different when, in fact, they are identical. All statements of comparison in the text have passed a hypothesis test at the 0.10 level of significance or better, and most have passed a hypothesis test at the 0.05 level of significance or better. This means that, for most differences cited in the text, the estimated difference between parameters is greater than twice the standard error of the difference. For the other differences mentioned, the estimated difference between parameters is between 1.6 and 2.0 times the standard error of the difference. When this is the case, the statement of comparison will be qualified in some way; e.g., by use of the phrase "some evidence." Again, note that the standard errors used here are rough approximations, particularly on estimates involving sources of data other than the CPS. These standard errors do not account for sampling or nonsampling errors introduced by using the mathematical model.

Note when using small estimates. Summary measures, (such as means, medians, and percent distributions), are shown when the base is 75,000 or greater. Because of the large standard errors involved, there is little chance that summary measures 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 the corresponding percentages.

These smaller estimates are provided primarily to permit such combinations of the categories as serve each user's needs.

Standard errors for data based on surveys other than CPS.

To compute standard errors of data obtained from the SOI reports, see the report SOI Bulletin: Winter 1984-85, Individual Income Tax Returns, Preliminary Data: 1983. To compute standard errors of data obtained from the 1983 Annual Housing Survey, see any of the reports in the series Current Housing Reports, Series H-150-83, Annual Housing Survey: 1983.

CPS 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 an individual 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 C-1 through C-4 are approximations to standard errors of various estimates for households, families, unrelated individuals, and persons in the United States. Estimated standard errors for specific characteristics cannot be obtained from tables C-1 through C-4 without the use of the factors in table C-5. The factors in table C-5 must be applied to the generalized standard errors in order to adjust for the combined effect of sample design and estimating procedure on the value of the characteristic. Standard errors for intermediate values not shown in the generalized tables of standard errors may be approximated by linear interpolation. Standard errors of estimated means and medians are provided in the detailed tables.

Two parameters (denoted "a" and "b") are used to calculate standard errors for each type of characteristic; they are also presented in table C-5. These parameters were used to calculate the standard errors in tables C-1 through C-4 and to calculate the factors in table C-5. They also may be used to directly calculate the standard errors for estimated numbers and percentages. Methods for direct computation are given in the following sections.

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

$$\sigma_x = f\sigma \quad (1)$$

where f is the appropriate factor from table C-5, and σ is the standard error on the estimate obtained by interpolation from tables C-1 or C-3. Alternatively, standard errors may be approximated by using formula (2), from which the standard errors were calculated in tables C-1 and C-3. Use of this formula will provide more accurate results than the use of formula (1).

Table C-1. Standard Errors of Estimated Numbers of Households, Families, Unrelated Individuals, and Persons, for 1982 and 1983 CPS and CPS Simulations—Total, White, and Spanish Origin

(Numbers in thousands)

Size of estimate	Standard error ¹	Size of estimate	Standard error ¹
75.....	11	7,500.....	111
100.....	13	10,000.....	127
250.....	21	15,000.....	154
500.....	29	25,000.....	192
1,000.....	41	50,000.....	247
2,000.....	58	100,000.....	269
3,000.....	71	125,000.....	243
5,000.....	91	160,000.....	139

¹These values must be multiplied by the appropriate factor in table C-5 to obtain the correct standard error.

$$\sigma_x = \sqrt{ax^2 + bx} \quad (2)$$

Here x is the size of the estimate and a and b are the parameters in table C-5 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 upon 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 denominator of the percentage are in different categories, use the factor or parameters from table C-5 indicated by the numerator. The

Table C-2. Standard Errors of Estimated Percentages of Households, Families, Unrelated Individuals, and Persons, for 1982 and 1983 CPS and CPS Simulations—Total, White, and Spanish Origin

Base of estimated percentage (thousands)	Estimated percentage ¹				
	2 or 98	5 or 95	10 or 90	25 or 75	50
75.....	2.1	3.3	4.5	6.6	7.6
100.....	1.8	2.9	3.9	5.7	6.6
250.....	1.2	1.8	2.5	3.6	4.1
500.....	0.8	1.3	1.8	2.5	2.9
1,000.....	0.6	0.9	1.2	1.8	2.1
2,000.....	0.4	0.6	0.9	1.3	1.5
3,000.....	0.3	0.5	0.7	1.0	1.2
5,000.....	0.3	0.4	0.6	0.8	0.9
7,500.....	0.2	0.3	0.5	0.7	0.8
10,000.....	0.2	0.3	0.4	0.6	0.7
15,000.....	0.15	0.2	0.3	0.5	0.5
25,000.....	0.12	0.2	0.2	0.4	0.4
50,000.....	0.08	0.13	0.2	0.3	0.3
100,000.....	0.06	0.09	0.12	0.2	0.2
125,000.....	0.05	0.08	0.11	0.2	0.2
160,000.....	0.05	0.07	0.10	0.14	0.2

¹These values must be multiplied by the appropriate factor in table C-5 to obtain the correct standard error.

Table C-3. Standard Errors of Estimated Numbers of Households, Families, Unrelated Individuals, and Persons, for 1982 and 1983 CPS and CPS Simulations—Black and/or Other Races

(Numbers in thousands)

Size of estimate	Standard error ¹	Size of estimate	Standard error ¹
75.....	12	3,000.....	69
100.....	14	5,000.....	85
250.....	22	7,500.....	95
500.....	30	10,000.....	99
1,000.....	42	15,000.....	90
2,000.....	58	20,000.....	44

¹These values must be multiplied by the appropriate factor in table C-5 to obtain the correct standard error.

approximate standard error, $\sigma(x,p)$, of an estimated percentage can be obtained by use of the formula

$$\sigma(x,p) = fo \quad (3)$$

In this formula, f is the appropriate factor from table C-5 and σ is the standard error on the estimate from table C-2 or C-4. Alternatively, standard errors may be approximated by using formula (4), from which the standard errors in tables C-2 and C-4 were calculated. Use of this formula will provide more accurate results than use of formula (3).

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

Here x is the size of the subclass of persons or families and unrelated individuals which is the base of the percentage, p is the percentage ($0 < p < 100$), and b is the parameter in table C-5 associated with the particular type of characteristic in the numerator of the percentage.

Illustrations of the use of standard error tables. Table 1 of this report shows that there were 4,431,000 households in the United States with a before-tax income in the range of \$25,000 to \$27,499 in 1983. Table C-5 indicates that the appropriate "a" and "b" parameters to use in calculating a standard error for this estimate are $a = -0.000010$ and $b = 1,721$. Using formula (2), the approximate standard error is

Table C-4. Standard Errors of Estimated Percentages of Households, Families, Unrelated Individuals, and Persons, for 1982 and 1983 CPS and CPS Simulations—Black and/or Other Races

Base of estimated percentage (thousands)	Estimated percentage ¹				
	2 or 98	5 or 95	10 or 90	25 or 75	50
75.....	2.2	3.4	4.7	6.8	7.9
100.....	1.9	3.0	4.1	5.9	6.8
250.....	1.2	1.9	2.6	3.8	4.3
500.....	0.9	1.3	1.8	2.7	3.1
1,000.....	0.6	0.9	1.3	1.9	2.2
2,000.....	0.4	0.7	0.9	1.3	1.5
3,000.....	0.4	0.5	0.8	1.1	1.3
5,000.....	0.3	0.4	0.6	0.8	1.0
10,000.....	0.2	0.3	0.4	0.6	0.7
15,000.....	0.2	0.2	0.3	0.5	0.6
20,000.....	0.14	0.2	0.3	0.4	0.5

¹These values must be multiplied by the appropriate factor in table C-5 to obtain the correct standard error.

$$\sqrt{-0.000010 (4,431,000)^2 + 1,721 (4,431,000)} \doteq 86,000^1$$

The 68-percent confidence interval as shown by the data is from 4,345,000 to 4,517,000. The 95-percent confidence interval is from 4,259,000 to 4,603,000 (using twice the standard error). Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 95 percent of all possible samples.

Table B shows that 4.0 percent of the 85,407,000 households in the United States had before-tax incomes less than \$30,000 but greater than \$27,500 in 1983. Using formula (4) and the appropriate "b" parameter of 1,721 from table C-5, the standard error of 4.0 percent is given by

$$\sqrt{\frac{1,721}{85,407,000} 4.0(100.0-4.0)} = 0.09^2$$

Thus, rounded to one decimal place, the 68-percent confidence interval on the estimated percentage is from 3.9 to 4.1, and the 95-percent confidence interval is from 3.8 to 4.2.

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

$$\sigma (x-y) = \sqrt{\sigma_x^2 + \sigma_y^2 - 2\rho\sigma_x\sigma_y} \quad (5)$$

where σ_x and σ_y are the standard errors of the estimates x and y and ρ represents the correlation between the two estimates. The estimates can be of numbers, percents, ratios, etc. For differences between before- and after-tax income estimates, assume a value of 0.7 for ρ . For differences between 1982 and 1983 estimates, use the value of ρ for the appropriate characteristic from table C-6. For all other differences, ρ should be assumed zero.

Illustration of the computation of the standard error of a difference. Table 1 of this report shows that the median before-tax 1983 income of owner-occupied households was \$25,485 and the median before-tax 1983 income of renter-occupied households was \$14,395. The published estimates of the standard errors of these medians are \$124 and \$125, respectively. Therefore, the standard error of the estimated difference of \$11,090 is

$$\sqrt{(124)^2 + (125)^2} = 176$$

This means that the 68-percent confidence interval on the difference as shown by these data is from \$10,914 to \$11,266. The 95-percent confidence interval on the difference is from \$10,738 to \$11,442. Therefore, a conclusion that the average estimate derived from all possible samples

lies within a range computed in this way would be correct for roughly 95 percent of all possible samples. Since this interval does not contain zero, we can conclude with 95-percent confidence that 1983 median before-tax income for owner-occupied households was higher than 1983 median before-tax income for renter-occupied households.

Standard error of a ratio. Certain mean values for persons in families or households shown in the tables were calculated as the ratio of two numbers. For example, the mean number of persons per family or household is calculated as

$$\frac{x}{y} = \frac{\text{total number of persons in families or households}}{\text{total number of families or households}}$$

Ratios of before- to after-tax estimates are also discussed in this report. For example, the ratio of mean household income before and after taxes is calculated as

$$\frac{x}{y} = \frac{\text{mean household income before taxes}}{\text{mean household income after taxes}}$$

Standard errors for these ratios may be approximated as shown below. There are three cases to consider. In the first two cases, the denominator y represents a count of families or households of a certain class, and the numerator x represents a count of persons with the characteristic under consideration who are members of these families or households. In the third case, the numerator x and denominator y represent before- and after-tax estimates.

Case 1: There is at least one person having the characteristic in every family or household of the class: as for example, the mean number of persons per family or the mean number of persons per family with a male householder. For ratios of this kind, the standard errors are approximated by the following formula:

$$\frac{\sigma_x}{y} = \sqrt{\left(\frac{x}{y}\right)^2 \left[\left(\frac{\sigma_y}{y}\right)^2 + \left(\frac{\sigma_x}{x}\right)^2 - 2\rho\left(\frac{\sigma_x}{x}\right)\left(\frac{\sigma_y}{y}\right)\right]} \quad (6)$$

The standard error of the estimated number of families or households, σ_y , and the standard error of the estimated number of persons with the characteristics in those families or households, σ_x , may be calculated by the methods described above. In formula (6), ρ represents the correlation coefficient between the numerator and the denominator of the estimate. In the above examples, and for other ratios of this kind use 0.7 as an estimate of ρ .

Case 2: The number of persons having the characteristic in a given family or household may be 0, 1, 2, 3, or more: for example, the mean number of persons

¹Using formula (1) with appropriate $f = 1.0$ and an interpolated σ from table C-1, the standard error of 4,431,000 is 85,000.

²Using formula (3) with appropriate $f = 1.0$ and $\sigma = 0.09$ (from table C-2), the standard error of 4.0 percent is $(1.0)(0.09) = 0.09$.

under 18 years of age per household. For ratios of this kind the standard error is approximated by formula (6), but q is assumed to be zero. If q is actually positive (negative), then this procedure will provide an overestimate (underestimate) of the standard error of the ratio.

Case 3: The numerator and denominator represent before- and after-tax estimates. For example, the numerator may represent the number of families or households in a certain income category before taxes, and the denominator may represent the number of families or households in the same category after taxes. For

Table C-5. "a" and "b" Parameters and "f" Factors for Calculating Approximate Standard Errors of Estimated Numbers and Percentages of Households, Families, Unrelated Individuals, and Persons for 1982 and 1983 CPS and CPS Simulations

Type of characteristic ¹	Parameter		f factor
	a	b	
INCOME			
Number of households, families, or unrelated individuals:			
Total or White.....	-0.000010	1,721	1.00
Black and/or other races.....	-0.000089	1,876	1.00
Spanish origin.....	-0.000014	2,420	1.19
Number of persons:			
Total or White.....	-0.000009	1,885	1.05
Black and/or other races.....	-0.000077	2,155	1.07
Spanish origin.....	-0.000020	3,000	1.32
POVERTY			
Number of households, families, or unrelated individuals:			
Total or White.....	0.000076	1,876	1.04 ²
Black and/or other races.....	0.000076	1,876	1.00 ²
Spanish origin.....	-0.000014	2,420	1.19
Number of persons:			
Total.....	-0.000031	7,946	2.15
NONINCOME			
Number of households, families, or unrelated individuals:			
Total or White.....	-0.000010	1,389	0.90
Black and/or other races.....	-0.000087	1,255	0.82 ²
Spanish origin.....	-0.000020	1,422	0.91
Number of persons:			
Total or White.....	-0.000017	3,500	1.43
Black and/or other races.....	-0.000210	5,020	1.64
Spanish origin.....	-0.000026	4,432	1.60
Number of persons in households or families:			
All households or family members:			
Total or White.....	-0.000020	4,253	1.57
Black and/or other races.....	-0.000308	7,402	1.99
Spanish origin.....	-0.000044	8,917	2.28

¹For nonmetropolitan areas, multiply the "a" and "b" parameters by 1.5.

²The "f" factor for these characteristics is to be used for calculating standard errors of percentages only. For standard errors of estimated numbers, the appropriate "a" and "b" parameters and formula (2) must be used.

ratios of this kind σ_x and σ_y represent the standard errors of before- and after-tax estimates, respectively. For ratios of this type, ρ is assumed to be 0.7 for before- and after-tax income estimates.

STANDARD ERRORS OF ESTIMATED MEANS AND MEDIANS

Estimated standard errors are provided for the means and medians of the published income distributions, and do not need to be calculated by the user. However, because of the approximations used in developing the formula used to estimate the standard error of the mean, the standard error reported for this statistic will generally be an underestimate. Since some users may wish to combine two or more income distributions and compute means and medians for the combined distribution, the following sections are provided to enable the user to calculate standard errors for these statistics.

Estimating the standard error of the mean. The standard error of a mean can be approximated by formula (7). Because of the approximations used in developing formula (7), an estimate of the standard error of the mean obtained from that formula will generally underestimate the true standard error. The formula used to estimate the standard error of a mean is

$$\sigma_x = \sqrt{\frac{b}{y} s^2} \tag{7}$$

where y is the size of the base and b is a parameter which depends on the sample size, the sample design, the estimation procedure, and the type of characteristic. The b values are given in table C-5. The variance s^2 , is given by formula (8):

$$s^2 = \sum_{i=1}^c p_i \bar{x}_i^2 - \bar{x}^2 \tag{8}$$

where \bar{x} is the mean of the distribution, defined by

$$\bar{x} = \frac{\sum_{i=1}^c p_i x_i}{\sum_{i=1}^c p_i}$$

c is the number of groups; i indicates a specific group, taking on values 1 through c .

p_i is the estimated proportion of households, families, or persons whose values, for the characteristic (x -values) being considered, fall in group i .

$\bar{x}_i = (Z_{i-1} + Z_i)/2$ where Z_{i-1} and Z_i are the lower and upper interval boundaries, respectively, for group i .

\bar{x}_i is assumed to be the most representative value for the characteristic for households, families, or

persons in group i . Group c is open-ended, i.e., no upper interval boundary exists. For this group an approximate average value is $\bar{x}_c = \frac{3}{2} Z_{c-1}$

When two or more distributions are combined, the mean of the combined distribution is

$$\bar{x} = \frac{1}{y} \sum_j \bar{x}_j y_j$$

where \bar{x}_j is the mean of the j th distribution, y_j is the base of the j th distribution, and $y = \sum_j y_j$. This mean must be computed by the user.

Confidence interval and standard error of a median. The sampling variability of an estimated median depends upon the form of the distribution as well as the size of its base. An approximate method for measuring the reliability of an estimated median is to determine a confidence interval about it. (See the section on sampling variability for a general discussion of confidence intervals.) The following procedure may be used to estimate the 68-percent confidence limits and hence the standard error of a median based on sample data.

1. Determine, using the standard error tables and factors or formula (4), the standard error of the estimate of 50 percent from the distribution;
2. Add to and subtract from 50 percent the standard error determined in step (1);
3. Using the distribution of the characteristic, calculate the values from the distribution corresponding to the two points established in step (2). These values will be the limits for the 68-percent confidence interval;
4. Divide the difference between the two points determined in step (3) by two to obtain the standard error of the median.

For calculation of the confidence interval in step (3) use Pareto interpolation for any point in an income interval greater

Table C-6. Year-to-Year Correlation Coefficients for Income and Poverty Characteristics: 1983 and 1982

Characteristic	Households, families, or unrelated individuals	
	Income	Poverty
Total.....	.35	.35
White.....	.35	.30
Black and/or other races..	.35	.35
Spanish origin.....	.55	.55

than \$2,500 in width, and linear interpolation otherwise. A 95-percent confidence interval may be determined by finding the values corresponding to 50 percent plus and minus twice the standard error determined in step (1).

The formulae used to implement step (3) for Pareto or linear interpolation are:

Pareto:

$$x_{pN} = A_1 \exp \left[\frac{\ln \left(\frac{pN}{N_1} \right) \ln \left(\frac{A_2}{A_1} \right)}{\ln \left(\frac{N_2}{N_1} \right)} \right] \quad (9)$$

Linear:

$$x_{pN} = \frac{N_1 - pN}{N_1 - N_2} (A_2 - A_1) + A_1 \quad (10)$$

where N = total number of households, families, or persons in the distribution.

x_{pN} = estimated income for which the number pN ($0 < p < 1$) of households, families, or persons in the distribution have larger incomes. For the purposes of calculating the confidence interval, p takes on the two values in step (2). Note that the median can be approximated by using $p = 0.50$ in the formulae.

A_1 and A_2 = the estimated incomes which are the lower and upper bounds, respectively, on the interval in which x_{pN} falls.

N_1 and N_2 = the estimated number of households, families, or persons with incomes greater than A_1 and A_2 , respectively.

exp = refers to the exponential function

ln = refers to the natural logarithm function.

It should be noted that a mathematically equivalent result is obtained by using common logarithms (base 10) and antilogarithms.

Since the new, more detailed income intervals used in this report have \$2,500 increments up to \$40,000 for households and families and since Pareto interpolation will only be used when a median income falls in an interval of width larger than \$2,500, this type of interpolation is needed very infrequently (i.e., only in cases where the estimated median income exceeds \$40,000 for households and families). For this reason an illustration of the use of Pareto interpolation in computing a confidence interval for a median is not given here.

Illustration of the computation of a confidence interval and the standard error for a median computed using linear interpolation. Table 1 of this report shows that the median before-tax income in 1983 for owner-occupied households in the United States is estimated to be \$25,485. Table 1 also shows that the base of the distribution from which this median was determined is 55,157,000.

- Using formula (4), the standard error of 50 percent on a base of 55,157,000 is about 0.3 percentage points.
- To obtain a 68-percent confidence interval on the estimated median, add to and subtract from 50 percent the standard error found in step 1. This yields percent limits of 49.7 and 50.3.
- From table 1, the 1983 before-tax income of 30,074,000 (54.5 percent) of all owner-occupied households was at least \$22,500, and the 1983 before-tax income of 26,978,000 (48.9 percent) of all owner-occupied households was at least \$25,000.

Thus, the entire 68-percent confidence interval falls in the income interval \$22,500 to \$24,999. Therefore, the median before-tax income and the upper and lower limits on the confidence interval are to be calculated using linear interpolation. Using formula (10), the lower limit on the estimate is found to be about

$$\frac{30,074,000 - (.503)(55,157,000)}{30,074,000 - 26,978,000} (\$24,999 - \$22,500) + \$22,500 = \$24,381$$

Similarly, the upper limit is found by linear interpolation to be about

$$\frac{30,074,000 - (.497)(55,157,000)}{30,074,000 - 26,978,000} (\$24,999 - \$22,500) + \$22,500 = \$24,648$$

Thus, the 68-percent confidence interval on the estimated median is from \$24,381 to \$24,648.

- The standard error of the median is, therefore, $(\$24,648 - \$24,381)/2$, i.e., \$134. (Note: Published standard errors are calculated by the same method as above. However, a different standard error may be obtained because of rounding-off errors; e.g., for the above illustration, table 1 gives a standard error of \$124.)

STANDARD ERROR OF PER CAPITA INCOME

Certain mean values in this report represent the per capita income for households of a certain class. The mean per capita income is approximately equal to:

$$x_c = \frac{h_c m_c}{p_c}$$

where h_c = number of households in class c.

m_c = mean income for households in class c.

p_c = number of persons in households in class c.

x_c = mean per capita income of persons in households in class c.

Standard errors for these means may be approximated using the following formula:

$$\sigma_{(x_c)} = \sqrt{\left(\frac{h_c m_c}{p_c}\right)^2 \left[\left(\frac{\sigma_{m_c}}{m_c}\right)^2 + \left(\frac{\sigma_{p_c}}{p_c}\right)^2 + \left(\frac{\sigma_{h_c}}{h_c}\right)^2 - 2\rho \left(\frac{\sigma_{p_c}}{p_c}\right) \left(\frac{\sigma_{h_c}}{h_c}\right) \right]}$$

In this formula, ρ represents the correlation between p_c and h_c . There are two cases to consider, depending on the nature of class c .

Case 1: Class c represents households containing a fixed number of persons. For example, h_c could be the number of 3-person households. In this case, there

is an exact correlation between the number of persons in the household and the number of households. Therefore, $\rho = 1$ for households of this type.

Case 2: Class c represents households of other demographic types, for example, households in distinct regions, households in which the householder is of a certain age group, and owner-occupied and tenant-occupied households. In these examples and other classes in which there is not a perfect correlation between the number of persons in the household and the number of households, use 0.7 as an estimate of ρ .

Appendix D. Underreporting of Income

This appendix discusses some important aspects of underreporting, its measurement, and presents some estimates of underreporting for the base year 1983. The general survey phenomenon that is commonly termed underreporting actually refers to the tendency of household surveys to underestimate the number of income recipients and/or the amount of income received. There are three main causes for underreporting: failure to report receipt of the income type, underreporting of the amount received, and misclassification of the income type received.

Accurately measuring the extent of underreporting of income is difficult for many of the income types. There are two main components of measuring underreporting: the number of income or recipients and the total amount of income received. Measuring the survey undercount of recipients for the March CPS is extremely difficult because independent estimates (benchmarks or controls) for the CPS noninstitutional, "ever-received during the year" recipient concept are difficult

to validate. In addition, some of the administrative sources required for the derivation of independent estimates have significant errors themselves.

The derivation of accurate underreporting estimates for amounts of income is easier but still not without similar problems. In general, better administrative data are available on the annual amount of benefits received, or income earned, than recipients. Some of the more important problems associated with development of the independent controls for amounts are adjusting independent estimates to the CPS noninstitutional population, significant differences between alternate sources of independent estimates, especially for self-employment income, interest, dividends, and rents, and periodic revisions to the sources of independent estimates that delay availability of data and significantly alter estimates of underreporting. Estimates of underreporting for amounts of money income for 1983 are shown in table D-1.

Table D-1. Comparisons of CPS Aggregate Money Income in 1983 With Independently Derived Estimates, by Income Type

(Billions of dollars)

Source of income	Independent estimate	CPS estimate	CPS as a percent of independent estimate
Total.....	2,402.5	2,164.9	90.1
Wages and salaries.....	1,632.3	1,616.3	99.0
Self-employment.....	112.6	130.1	115.5
Social Security ¹	155.2	142.3	91.7
Supplemental Security Income.....	9.0	7.6	84.9
Aid to Families with Dependent Children.....	13.8	10.5	76.0
Interest, dividends, and rental income.....	315.3	143.2	45.4
Veterans' payments.....	14.0	8.8	63.3
Unemployment compensation.....	26.1	19.7	75.5
Workers' compensation.....	14.1	6.6	47.0
Private, government, and military pensions.....	110.1	79.7	72.4

¹Includes Railroad Retirement Benefits.

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