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**Income Inequality in the 1990s: Re-Forging a Lost Relationship?**

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## **Abstract**

Using data from March Current Population Surveys we find gains from economic growth over the 1990s business cycle (1989-2000) were more equitably distributed than over the 1980s business cycle (1979-1989) using summary inequality measures as well as kernel density estimations. The entire distribution of household size-adjusted income moved upwards in the 1990s with profound improvements for African Americans, single mothers and those living in households receiving welfare. Most gains occurred over the growth period 1993-2000. Improvements in average income and income inequity over the latter period are reminiscent of gains seen in the first three decades after World War II.

**Journal of Economic Literature Classification:** D3

**Keywords:** income inequality, Gini trends, kernel density estimations, economic well-being

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## **Introduction**

Wage and income inequality are important measures of a country's social welfare. Measures of wage inequality are calculated at an individual level. But most workers live with others and share income, so while income inequality is also measured at the individual level, such measures require assumptions about the appropriate sharing unit and the degree that income is shared within the unit.<sup>1</sup>

However, the trend in sharing unit size-adjusted income inequality in the United States, whether measured at the family or household level has been similar to that of individual earnings since the 1960s (Bradbury 1996, Karoly 1992, and Lynch 2003, Burkhauser, Crews, Daly and Jenkins 1996, Burkhauser, Cutts, Daly and Jenkins 1999). The variance in the distribution of income narrowed through the middle of the 1970s but then widened throughout the 1980s.

This paper extends the literature by examining the trend and dispersion of household size-adjusted incomes through the 1990s. In doing so, we recognize that both incomes and inequality vary over the business cycle. When we compare levels of income and inequality across the three peaks of the two business cycle that span the 1980s and 1990s (1979-1889-2000), we draw four conclusions.

First, average household size-adjusted income increased substantially over both the 1980s and 1990s, but inequality, which had widened throughout the business cycle of the 1980s, began narrowing during the long period of economic growth in the 1990s. Second, unlike the 1980s, the entire distribution of income shifted upward over the 1990s with little or no increase in overall inequality. Third, inequality narrowed within most lower-income subgroups and their average incomes rose relative to those of higher income groups in the 1990s. Fourth, the relationship between economic growth and income inequality over the 1990s was closer to what

the United States population experienced during the decades following World War II than what was experienced in the 1970s and 1980s.

### **Literature Review**

Over a typical business cycle, the United States experienced both rapid growth in average income and a decline in income inequality in the first three decades following World War II. The postwar era might be described as one characterized by prosperity distributed in a manner that equalized the living standards of Americans. It was not until the mid-1970s that increases in average income over a business cycle were accompanied by rising inequality. (Dooley and Gottschalk 1984 and Parker 1999). This prompted researchers to investigate this dramatic change in the relationship between income and inequality.

An early suspect was the oil embargo that occurred midway through the 1970s, raising energy prices and hastening the decline in energy inefficient large scale manufacturing. As discussed in Chevan and Stokes (2000) and by Ginther and Lampani (2004) in this volume, subsequent evidence has downplayed the importance of this structural shift hypothesis. At a national level, the shift from manufacturing to service sector jobs has not been shown to be an important source of the change in labor earnings or income inequality in the 1980s. Many jobs in the service sector pay relatively high wages and yield earnings distributions similar to those found in manufacturing. Thus, as manufacturing declined and services increased, the net impact on the distribution of income was not large. However, economic restructuring does appear to help explain the income distribution experiences of some localities particularly in areas with little diversification in employment (Lynch 2003 and McLaughlin 2002).

Household size-adjusted income is affected by changes in the individual earnings of household members as well as changes in household composition. Researchers first looked at the underlying sources of individual earnings variation: demographic shifts in labor supply, immigration, and changes in levels of education. And then they turned to the single most dramatic change in household composition—the rise in the prevalence of single mother households. These potential influences on income inequality will be discussed in turn.

The single most powerful factor affecting wage and income distributions over the past 50 years has been changes in the returns to education. Better educated and presumably higher skilled workers have always been able to command higher wages than lower educated and less skilled workers. But the premium better educated workers have been able to command has varied over time (Juhn, Murphy, and Pierce 1993). Couch and Daly (2004) provide historical evidence on this issue as well as a more thorough discussion of this literature in this volume.

The exact forces causing changes in this premium are in dispute. The leading explanation focuses on demographic trends. As baby boomers exited college in the late 1960s and 1970s, there was an initial increase in the supply of highly educated workers that reduced their relative pay and helped compress the distribution of both personal earnings and household income. This trend was reinforced by an immigration policy that gave preferences to highly educated workers. But a subsequent baby bust resulted in a decrease in the relative supply of college educated workers, increasing the wages of highly skilled labor. This together with a shift in immigration policy toward accepting less skilled workers put downward pressure on the wages of workers at the bottom of the earnings distribution. This widened the difference in the earnings of high and low skilled workers (Dooley and Gottschalk 1984). This explanation is consistent with the increased dispersion in inequality that began occurring in the 1970s despite growth in income

and is also consistent with the end of the relationship between growth in average household income and decreasing inequality.

Education levels have also been examined as an explanation of trends in earnings inequality particularly as it applies to across group differences. In the 1960s, while a large proportion of U.S. workers had a high school education, a substantial proportion did not, especially non-whites. This dramatically changed, so that by the mid-1970s average educational attainment was greater, in large part because of reductions in the proportion of prime-age workers with less than a high school education. This substantially reduced inequality and brought the income of non-whites more in line with that of whites as discussed in this issue by Couch and Daly (2004). From the mid-1970s to the end of the 1980s, however, educational levels across groups were relatively stable and do not appear to have played a large role in reducing cross group inequality (Danziger and Gottschalk 1987).

Nonetheless, when one moves away from cross group differences, average educational attainment continues to rise. This is represented in the proportion of workers who have more than a high school level of education versus those who do not. In 2000, the last year of our analysis, the proportion of workers aged 25-61 in the U.S. with more than a high school degree had risen secularly to a high of 56 percent while the share with less than a high school education had fallen to 12 percent. Rising attainment along with higher returns for those skill levels points to the continuing importance of education in the area of income inequality.

Restructuring, demographic shifts, and educational levels, among other factors, all affected the wages of individuals. In that direct way, they also affected the income of the households in which these individuals live. But an even more important change occurred over this period with respect to household income, in part related to changes in individual behavior

within households and in part related to how individuals form households. Prior to the mid-1970s, although the prevalence of single mother households was rising, the vast majority of children lived in two-parent households. As female labor force participation began to increase, prior to the mid-1970s, this especially brought new income into lower income households – both single mother and two-parent.

Over time, the share of the population living in households with children aged 17 and below has fallen, but the percentage of those households headed by a single mother has increased from 17.4 percent in 1979 to 21.6 percent in 2000. At the same time, female labor force participation has increased for all types of households and women in upper income households have become much more likely to work. Thus, since the mid-1970s, the change in household structure along with the increased participation of women in the labor market has served to widen the distribution of household income in the United States (Bishop et al. 1997, Bradbury 1996, Cancian and Reed 1999, Chevan and Stokes 2000, and Karoly and Burtless 1995).

When inequality widens, it means that incomes are more spread out. As inequality has risen, a related topic that has received much attention is whether the increased dispersion has been associated with a movement of households out of the middle of the income distribution into the lower tail. Most research on family or household size-adjusted income use a single value to quantify dispersion over the entire distribution. Some studies focus on the variance of income, some take the ratio of income at the 90<sup>th</sup> and 10<sup>th</sup> percentiles to gauge the spread, and others use measures such as the Gini coefficient.

None of these measures reveal what is happening throughout the distribution. For this purpose, it is instructive to actually look at pictures of the density. Researchers, who have taken this approach, report that over the 1980s, income inequality widened as the mass of people in the



middle of the distribution slid toward both the upper and lower tails of the distribution. However, the number of persons experiencing an increase in their household or family size-adjusted income greatly exceeded those experiencing a decline. Those at the bottom of the distribution were disproportionately public welfare recipients. The real value of public in-cash welfare benefits declined over the 1980s and explains much of the downward movement of those with relatively low incomes (Burkhauser, Crews, Daly and Jenkins 1996 and Burkhauser, Cutts, Daly, and Jenkins 1999).

## **Data**

We use the March *Current Population Annual Demographic Survey* (CPS) from 1980 through 2001 to calculate the household size-adjusted income of individuals living in households. There have been two major business cycles over this period. While we use data from all years, we focus most of our comparisons on 1979, 1989, and 2000, each of which is a business cycle peak year. By examining those specific years, we implicitly control for the state of the business cycle. Following others, we use the CPS household definition to define the sharing unit for our population and also assume that household income is equally shared (Burkhauser et al. 1999).

Income from each source (e.g. wages and salaries, interest, etc.) in the CPS is top coded and those individuals with income above the top coding threshold are assigned a top coded value. Since the nominal income of the population rises each year, the share of the income distribution that is affected by top coding changes. This is also the case when the Census Bureau periodically changes the nominal value of the top codes. As a result, measures of inequality which require all observations, such as the Gini, are more likely to be influenced by top coding decisions than are

percentile-based measures such as the 90/10 ratio which are only affected to the degree that top codes in some of the sources affect those whose total income is below the relevant comparison quintile.

To address this issue, we impose consistent top coding solutions on each source of income, and sum over each of these sources to generate our measure of an individual's income in a given year. We do this by top coding income at the same percentile of the income distribution from that source for all years. That is, we determine in which year the largest portion (lowest percentile) of the income distribution from that source was affected by this censoring, then top code all years to reflect that portion. We do this for each source of income. In this way, all sources of income are consistently top coded at the same point in the distribution in all years. (See the Appendix for a more detailed discussion of this process and a table showing the income sources, share of the population affected by the top code and the most constrained year.)<sup>2</sup>

In order to control for differences in the number of people living in a household and hence the share of household income they control, it is important to take into consideration economies of scale associated with joint residence. How much sharing of income occurs among household members is a matter of some debate, as is the economies of scale associated with shared living within household. The literature on the appropriate returns to scale in household consumption does not provide a single universally agreed on value. Operationally, it has been shown that measures of levels and trends in inequality are not very sensitive to reasonable alternative scale economy assumptions; however, levels of overall income and the relative incomes of groups within the population are sensitive to the assumption made about household economies of scale. Larger households are measured as better off, and survivors experience larger falls in measured household size-adjusted income following the death of their spouse, the

higher returns to scale are assumed to be. (Burkhauser, Smeeding and Merz 1996; Burkhauser, Giles, Lillard and Schwarze 2003). Here we have adopted a commonly used procedure within the literature (Karoly and Burtless 1995) to estimate size adjusted income to reflect economies of scale by assuming income is spread equally across household members.<sup>3</sup>

In our sample we measure the household size-adjusted income of all people residing in households in the CPS. We are also interested in the income and income inequality of sub-populations in this sample. We compare all men and women, older (65 and over) and younger persons (aged 64 and younger), single mothers and mothers in two-parent households with a child aged 17 or younger, all those living or not living in a household receiving welfare payments, and working-age people (aged 25 to 61) without a high school education, with a high school education only, and with more than a high school education.

### **Trends in Income and Income Inequality 1979-2000**

It is now well established that inequality rose in the mid-1970s and 1980s along with average income. In this section we focus on how income and income inequality changed over two complete business cycles that spanned the 1980s and 1990s. In the tables below we report trends in mean and median household size-adjusted income along with two standard measures of inequality: a) the ratio of the 90<sup>th</sup> and 10<sup>th</sup> percentile (90-10 ratio) of the distribution of household size-adjusted income; b) the Gini coefficient.

Table 1 documents the ebb and flow of the business cycle of the 1980s with income falling from 1979 through 1982 and then rising through 1989.<sup>4</sup> A similar pattern of decline from 1989 through 1993 followed by continuous growth through 2000 marks the business cycle of the 1990s. The rise in inequality that occurred over the 1980s is well established. Not only did

inequality increase as the economy went into recession, but inequality continued to grow over the long period of economic growth between 1982 and 1989.

What is less widely reported is how this relationship between rising average income and income inequality changed in the 1990s. While inequality continued to grow as the economy moved into recession at the beginning of the decade, from 1993 to 2000, the growth period following the recession, real average (mean) household size-adjusted income increased over these seven years by \$4,497, while inequality fell by 2 percent (measured by the Gini coefficient) or by 10 percent (measured by the 90-10 ratio).

The widening of household income inequality which we observe in Table 1 for the decade of the 1980s also occurred within many demographic groupings. In Tables 2 through 7 we focus on some of these groups: men and women, older and younger people, women with minor children by marital status, those living in a household that receives welfare, and working age persons with different levels of educational attainment.

In all seven tables, inequality widened between 1979 and 1989, whether measured by the 90-10 ratio or the Gini coefficient. Just as inequality widened over the entire business cycle of the 1980s for all individuals, it also widened for each of the subgroups we considered. Importantly, this increase in income inequality occurred both as average income declined between 1979 and 1982 and as average income increased between 1982 and 1989; i.e., inequality increased monotonically across the entire business cycle of the 1980s.

We have already established that the aggregate experience of the 1990s was different than the 1980s in that inequality fell during the growth period of the business cycle much as it had in the postwar experience of the United States. Now, we consider the experiences of these

same subgroups in the 1990s relative to the 1980s as well as during the growth period from 1993-2000.

Table 2 shows that the household size-adjusted income of the average woman rose over each of the two business cycles, both absolutely and relative to the average man. This reduced between sex income inequality over the entire period but especially in the 1990s. This basic finding is consistent with that of Jacobsen (2004) who provides a more detailed examination of gender inequality in this volume. Inequality within the population of women rose in the 1980s but remained about the same in the 1990s with a major decline over the growth period 1993-2000 offsetting increases earlier in the decade. This reduced the growth of inequality in the 1990s relative to the 1980s. The income of the average man also rose over the entire period. Like women, men's income inequality rose continuously until 1993 and then fell. Over the entire 1990s business cycle men experienced substantial increases in average income but little change in income inequality. This also reduced the growth of inequality in the 1990s relative to the 1980s.

Table 3 shows that the household size-adjusted income of the average African American increased over each of the two business cycles. In the 1990s, their average incomes rose dramatically relative to those of other households. Inequality within the black population rose in the 1980s but fell dramatically in the 1990s, especially over the growth years 1993-2000. The income of the average non-black rose over the entire period but income inequality within this population also rose over both the 1980s and 1990s, although even in this population inequality fell between 1993 and 2000.

Table 4 shows that the household size-adjusted income of the average older person (aged 65 and older) increased over each of the two business cycles but especially in the 1980s. These

average gains outpaced those of younger men in the 1980s, leading to a substantial increase in the relative income of older to younger persons. But much more rapid gains by younger men in the 1990s almost completely offset these relative gains over the 1990s. Inequality within the older population grew in the 1980s but fell over the 1990s. The average younger person's income rose over both business cycles, as did their within group inequality over the 1980s. But their within group inequality fell in the 1990s, especially between 1993 and 2000.

Table 5 shows that the household size-adjusted income of the average single mother with a child aged 17 and younger rose modestly in the 1980s and hence fell substantially relative to the average mother in a two-parent household with such a child. In the 1990s, the absolute income of both these groups rose substantially, but the relative increase was much greater for single mothers. By 2000, the relative income of these two groups was approximately the same as in 1979. This dramatic increase in the relative income of single mothers to mothers in two-parent households began during the growth years of the 1990s and continued after the passage of welfare reform (Personal Responsibility and Work Opportunity Reconciliation Act) in 1996.<sup>5</sup>

Income inequality within this population of single mothers rose in the 1980s and continued to do so until 1993, as did income inequality within this population of mothers in two-parent households. Income inequality has fallen since then in this single mother population but remained about the same in this mother in two-parent household population.

Table 6 shows that the household size-adjusted income of the average person living in a household that received welfare benefits fell in the 1980s. The decline in the real value of welfare benefits explains most of the decline both absolutely and relative to the rest of the population. There has been a dramatic turnaround in this population's fortunes in the 1990s. Their average income has dramatically increased both absolutely and relative to the rest of the

population and in 2000 their relative income was higher than at any other time over the previous 20 years. Income inequality among this population rose in the 1980s but dropped modestly over the 1990s. Inequality among households not receiving welfare payments rose over both business cycles but less in the 1990s.

Table 7 focuses on the income and income distribution of working age people (aged 25-61) with different levels of educational attainment. The dramatic returns to education found in the literature for the 1980s is reaffirmed here. The average person with less than a high school education experienced a small decline in average household size-adjusted income over the 1980s and almost no gains thereafter. Average (mean) household size-adjusted income for this group at the peak of the 1990s business cycle in 2000 was \$20,007, less than the 1979 peak year level of \$20,654. The average income of this group fell precipitously relative to those with more than a high school education in the 1980s. It was still at this same low level in 2000 but did rise marginally between 1993 and 2000. Income inequality rose within this population in the 1980s but has fallen slightly in the 1990s.

Those with a high school education have not fared much better over the two business cycles. The average household size-adjusted income of those with a high school education has remained at about the same level over each of the three peaks of the 1980s and 1990s business cycles. It was \$30,665 in 1979, \$30,897 in 1989 and \$30,519 in 2000. These two lower education level populations are the only populations considered in this paper whose average income was lower in 2000 than in 1979. The average income of the high school education only population also fell precipitously relative to those with a higher education in the 1980s and remained at about that same low level in the 1990s. Income inequality among those with a high school education rose in the 1980s and the 1990s.

Those with more than a high school education experienced substantial increases in average income over the 1980s and modest increases over the 1990s, although their average income rose dramatically over the period 1993-2000. Income inequality within this population rose in both the 1980s and 1990s.

Table 8 shows how the size of the subpopulations discussed in Tables 2 through 7 changed between 1979 and 2000. This provides one more indication of the influence of these groups on average income and income distribution. There was little change in the share of females in the population and only a modest rise in the share of African Americans and older persons in the population, most of which occurred in the 1980s. But there were substantial changes in the shares of the other subpopulations. Members of welfare households made up 9.2 percent of the population in 1979 and this share dropped modestly to 8.7 in 1989 but by 2000 it had fallen to 6.1 percent, with most of the decline in the 1990s occurring after welfare reform in 1996. This decline was not due to a decline in the population of single mothers, as much as to a drop in the share of such mothers on welfare, as can be seen by looking at the next two columns. Mothers with children aged 17 and younger fell substantially over the entire period, but this fall was entirely among mothers living in two-parent households. The prevalence of single mothers in the population rose modestly over the period, but rapidly as a share of all mothers with younger children. Working age people with less than a high school education fell dramatically over the entire period. Working age people with more than a high school education rose substantially over the entire period. In the 1980s, the net effect of these two trends resulted in almost no change in the share of the population with only a high school education, but in the 1990s, it resulted in a substantial decline in this population.



Tables 2 through 7 show that while average income increased over both the 1980s and the 1990s business cycles there were marked differences in the subpopulations who gained over these two periods and in how income was distributed within these populations. While some lower income groups gained in absolute terms in the 1980s, those living in households receiving welfare as well as those with a high school education or less did not and income inequality within all groups increased.

This was not the case in the 1990s. All low income groups gained in absolute terms and some gained substantially in relative terms, especially, women, African Americans, and those in households that received welfare payments. Furthermore, these traditionally low income groups experienced their most rapid gains during the growth period 1993-2000. In addition, the gains from economic growth plus the welfare reforms of 1996 enabled single mothers with younger children to experience rapid gains both absolutely and relative to mothers in two-parent households with younger children over the final four years of this growth period. The dramatic increases in the employment and labor earnings of single mothers since 1996 offset the decline in their welfare transfers. As reported by Blank (2002) the growth in employment of single mothers aged 20-65 was so great that by 1999, for the first time, their employment not only exceeded the employment of mothers in two-parent households aged 20-65 but was also greater than the employment of single women aged 20-65 with no children.

While within group inequality increased in all groups in the 1980s, it grew at a much slower pace for all groups in the 1990s and fell within several groups, especially after 1993. These results suggest that the correlation between rising average income and falling levels of inequality that characterized much of the post-World War II era in the United States returned during this strong and sustained period of economic growth in the 1990s.

## **Kernel Density Estimates of the Entire Household Size-Adjusted Distribution 1979-2000**

The results above suggest that the distribution of the fruits of growth were more equitably distributed over the business cycle of the 1990s. The two single value measures we used to approximate the changes in the entire distribution over the 1980s and 1990s yield similar trends, although they differed in magnitudes. The 90-10 ratio showed that for many groups of policy interest, inequality not only stopped rising but actually declined in the 1990s. Using the Gini coefficient measure we also found a declining inequality trend but one that was less pronounced. Comparing these two single value measures of the distribution of income suggests that the upper, lower, or both tails of the income distribution are widening. We now more fully explore how the distribution of income changed over the 1980s and 1990s by estimating the probability density function of household size-adjusted income of the population of the United States.<sup>6</sup>

In each figure, we plot the densities for the years of 1979, 1989, and 2000. As discussed above these years are peak years of the 1980s and 1990s business cycles. By making comparisons across peaks, we control for the state of the economy. Once again, we also focus on groups which prior research suggests most contributed to increasing inequality in the 1980s.

We begin with the density for all households. Figure 1 shows that over the 1980s business cycle from 1979 to 1989, the middle mass of the distribution fell (fewer people were in the middle of the distribution) with the vast majority spilling toward the higher tail of the distribution and a much smaller but still significant group spilling toward the lower tail of the distribution. Burkhauser et al (1999) using this same methodology demonstrate that while the number of people in the middle of the distribution fell significantly, the great majority became unequally richer as they spread out along the right tail of the distribution and this was driving the

increase in inequality captured by single value measures like the 90-10 ratio or the Gini coefficient in the 1980s.

As Figure 1 shows, the distribution of the economic gains made over the 1990s business cycle benefited all people living in households. This differs from the 1980s business cycle when the middle of the distribution declined with most people moving up but some also moving down. The 2000 distribution is characterized by *first order stochastic dominance* over the 1989 and 1979 distributions. At every percentile of the distribution, the level of income is higher in 2000 than in the other two business cycle peak years. While not everyone gained at the same rate, everyone in the distribution gained. The figures below focus on each of the subpopulations discussed above.

Figure 2 considers women who live in households and the plots within it mirror those found in Figure 1. The decline in the middle mass of women between 1979 and 1989 was primarily the result of a movement to the right with some significant movement to the left. In contrast the entire distribution moved to the right in 2000.

Figure 3 shows a more profound shift in the distribution for African-Americans. The middle mass of blacks dropped dramatically between 1979 and 1989 and like women, the majority spilled to the right but a much larger minority spilled to the left. This did not happen in the 1990s. Rather, the distribution moves dramatically to the right.

Figure 4 shows that almost the entire distribution of single mothers with younger children moved to the left between 1979 and 1989 as welfare benefits in this population were reduced in real terms. From 1989 through 2000, this trend reverses itself as the distribution shifts dramatically to the right. As discussed above, this change is most likely associated with

increased employment during the growth years of the 1990s but especially following welfare reform implemented in 1996.

Figure 5 shows that the distribution of older persons is more bunched in the middle than other populations and while the middle mass has declined over the two business cycles, it remains much more bunched than other populations. Between 1979 and 1989 the vast majority of the decline in the proportion of older persons in the middle is accounted for by increased rather than decreased income. This continues to be the case in examining changes in the distribution from 1989 to 2000.

Figure 6 shows the distribution for those who live in households receiving welfare payments. Here we see in starker terms the consequences of the cuts in real welfare benefits in the 1980s. Like single-parent females with minor children, but to a much greater degree, people living in households receiving welfare payments were much more likely in 1989 than 1979 to have lower average incomes because real welfare benefits fell during this period. The change between 1989 and 2000 is profoundly different. The entire distribution moves to the right.

Figure 7 shows the income distribution for those with less than a high school education. These results verify the lack of progress of poorly educated workers. While this population does not shift backward between 1979 and 1989 or 1989 and 2000, it also does not gain ground over these two business cycles. Rather the distribution of income in real terms in 2000 is approximately the same as it was in 1979.

Figure 8 shows the distribution for those with only a high school education. These results are worse than those without a high school education. The distribution of those with only a high school education moved significantly to the left between 1979 and 1989 and this population made no progress between 1989 and 2000. These results together with those in Figure 7 suggest

that those with a high school education or less did somewhat better in the 1990s than in the 1980s, but that it is more the decline in the shares of these two population (and the concomitant rise in the share of those with more than a high school education) in the 1990s than improvements in the returns to education of those still in these groups, that improved average income and reduced income inequality over this period.

These figures confirm the contrast between the distributional benefits of economic growth in the 1980s and 1990s. The entire income distribution moved to the right over the 1990s as did the conditional distributions for African Americans, single mothers with children and those living in household receiving welfare payment.

#### *Kolmogorov-Smirnov Tests of the Significance of Distributions Shifts*

The changes in the distribution of income provided above appear to be significant in most cases but to test whether the shifts in the distribution were statistically significant, we employ the Kolmogorov-Smirnov statistic. This test considers the null hypothesis that the distribution in one period is equal to the distribution in another period or  $H_0: F_1(x) = F_2(x)$ .

Table 9 provides statistics for comparisons between the years 1979-1989, 1989-2000, and 1979-2000 for the entire distribution as well as for each of the subgroups we have considered in the paper. Almost all of the tests indicate that the changes in the income distribution that have occurred in the past two decades are statistically significant at the 1 percent level with few exceptions. For those populations where this is not the case, p-values are reported.

#### **Conclusion**

Over a typical business cycle in the post-World War II period in the United States, rising incomes were generally associated with falling levels of inequality. That relationship appeared to

have ended in the mid-1970s. During the 1980s, income growth was associated with increased income inequality. The middle of the distribution declined in the 1980s. While the vast majority of those people lived in households that became better off, a small but significant group became worse off. Overrepresented groups who experienced reductions in their living standards in the face of a prolonged economic expansion included African Americans, single mothers with younger children and those living in households receiving welfare.

This paper shows that the economic gains of the 1990s business cycle were more evenly distributed. In aggregate, the entire distribution of income shifted upwards over this period with pronounced improvements in the incomes of African Americans, single mothers with younger children and those living in households receiving welfare payments.

The only group we observed who did not gain over the two decades of our analysis were working age persons with a high school education or lower. But importantly this population fell from 64 percent of the working age population in 1979 to 44 percent of the population in 1990 and even this population experience substantial gains in the growth years of the 1990s.

The 1990s appear to mark a return to a period where increases in economic growth are generally accompanied by a decline or at least no substantial increase in income inequality. It is too soon to conclude that the business cycle of the 2000s will yield similar results. It is good news, however, that the 1990s appear to be more representative of the period following World War II when increasing income was accompanied by decreasing inequality than of the period between the mid-1970s and the 1980s. This is particularly encouraging from a distributional perspective since this re-forged relationship appears to be strongest among many of the groups whose misfortunes made the largest contributions to increasing inequality in the 1980s, particularly welfare recipients, single mothers with younger children, and African Americans.

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## APPENDIX

We use the public-use Current Population Annual Demographic Survey (CPS) data to derive consistently top coded data for 1980-2001. Our objective was to create top codes that consistently capture the same percentile of the income of our sample across all years. Because total household income is not asked as one question but is the sum of each of the individual sources of income in the household, this required us to create a consistent top code for each of these sources of income over all years. Our strategy was to find the year at which the top code for a given source was at the lowest point in the distribution of income within that source and then to use that percentile as our cutoff point for all years. This strategy was complicated by the fact that the sources of income in the CPS have changed over time and we had to make some decisions with respect to how to combine these new categories. Furthermore, our values are sensitive to the years over which we are doing our comparisons since it is possible that the addition or subtraction of a year will change the most restrictive year in the data.

*Consistent Sources of Income.* In survey year 1988, the Census Bureau, began providing income in more detailed source categories: (a) labor income was divided into two categories, primary source (if the primary source of earned income was from labor), and the sum of secondary labor income sources (b) self-employment income was divided into two categories, primary source (if the primary source of earned income was from self-employment), and the sum of secondary self-employment income sources (c) farm income was divided into two categories, primary source (if the primary source of earned income was from farming), and the sum of secondary farm income sources (d) unemployment compensation, worker's compensation, and veteran's benefits were divided into three separate categories, (e) dividends and rental income

were divided into two separate categories, (f) alimony and child support were divided into two separate categories. They also created a few new sources: (g) two sources of private retirement income, (h) two sources of private disability income, (i) two sources of private survivor's income, and (j) and other income category. For these new sources of income (retirement, disability, survivor's and other income) respondents were asked to specify the exact source (e.g., private insurance benefits). Our first step was to merge the post-1987 source data into the pre-1988 source categories by recombining sources that were divided and allocating the new sources of income (e.g. company or union pension was assigned to retirement income.)

*Consistent Percentiles.* Our second step was to calculate the percentage of individuals subject to top coding in each year for each of our source categories. To do so for the post-1987 source data that we recombined, we used the sum of the top codes of the recombined sources. (See Burkhauser et al, 2003 for a detailed discussion of these issues.) In 1996, rather than assign the top code for all persons at or above the top code, the Census Bureau estimated a cell mean for those above the labor earnings, farm income and self-employment income top codes based on their individual characteristics. The Census Bureau followed the same procedure in 1999 for other private sources of income. To remain consistent with previous years, we continued to use the top coded values rather than the cell mean values in our data set. For each source, we imposed the most restrictive top code on all years, such that the top code hit the distribution at the same percentile in every year. Table 1A contains the percentage of the distribution affected by the top code and the year in which the most restrictive top code occurred for each source. The earliest constraining year is 1979 for retirement income and the most recent is 1999 for interest and dividends. The top codes hit self employed income at the lowest percentile of all our sources—3.6 percent of these values are top coded. But for wage and salary income, which is by

far the most important source of income, the percentage top coded is only 1.2 percent.

*Consistent Household Income.* Our last steps were to sum each individual's sources of income to obtain his or her personal income and then to sum these values across all household members to obtain household income.

**Table 1A. Percentage of the Distribution Above the Top Code and Year of the Most Restrictive Top Code for Each Income Source, 1979-2000.**

Income Source	Percentage	Year
Wages and Salaries	1.2	1980
Self Employment Income	3.6	1980
Farm Income	2.2	1980
Social Security Income	0.5	1980
Supplemental Security Income	1.9	1994
Public Welfare and Assistance	0.5	1995
Workers' and Unemp. Comp., Vet. Ben.	0.2	1985
Interest Income	0.9	1999
Dividends and Rental Income	1.5	1999
Retirement Income	0.2	1979
Alimony and Child Support	0.2	1998

Source: Authors' calculations from the Current Population Survey, Annual Demographic Survey, 1980-2001.

*Comparing levels and trends in Gini coefficients 1979-2000.* Figure 1A shows Gini coefficients derived from our time-consistent public-use data and those from the internal CPS data and the public use version of that CPS data reported in DeNavas-Walt and Cleveland (2002). In our series, there is no spike in earnings inequality in either 1993 or 1995. We use regression analysis to test whether our time-consistent Gini coefficients are significantly different from the Gini coefficients provided by the Census Bureau based on internal CPS data. The regression estimates the levels of the two Gini series, their time trends and changes in their

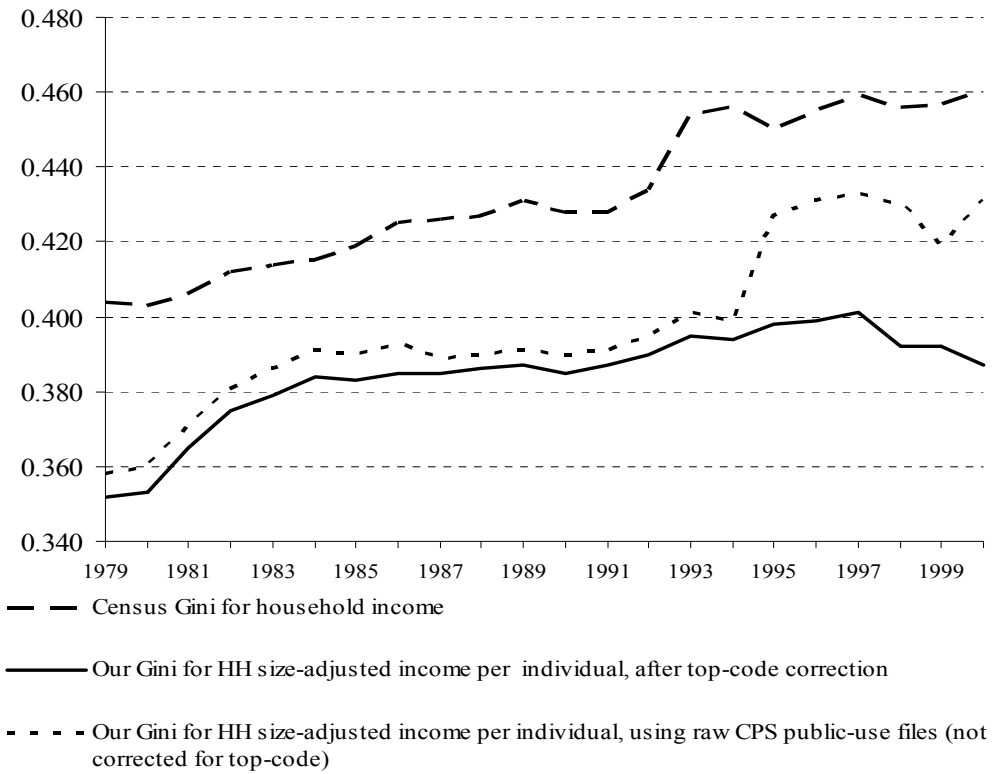
level and trend after 1992. The dependent variable ( $y$ ) is the Gini value of full time year-round earnings expressed as a percentage. There are six explanatory variables: a constant, which is the level of the time-consistent Gini; a time trend ( $t = 1, 2, \dots, 22$ ), which is the trend in the time-consistent Gini; a Gini source variable ( $d = 1$  if the internal data, otherwise 0), which controls for the difference between levels in the two Gini measures; ( $d$ ) and ( $t$ ) interacted, which controls for the difference between the trends in the two Gini measures; ( $d$ ) interacted with an indicator variable for post-1992 years ( $u$ ), which controls for divergence between levels after 1992; and ( $d$ ) interacted with ( $t$ ) and ( $u$ ), which controls for divergence between trends after 1992. The null hypotheses are that the trends are unchanged overall and after 1992. The test statistics are adjusted for the autocorrelation resulting from using the same people to compute both the internal and time-consistent Gini values. The estimated equation, with t-statistic in parentheses, is:

$$Y = 36.5 + 0.17 t + 3.59 d + 0.08 d t + 1.58 d u + -0.043 d t u$$

(133)      (7.9)      (7.8)      (1.6)      (1.0)      (-.046)

The internal data Gini is significantly larger than the time-consistent Gini. This is not surprising since we have top coded (consistently) a greater portion of the upper tail of the earnings distribution. However, the trends in the two series are not significantly different, overall and after 1992. Hence the trends in earnings inequality are not significantly different in the two series either post-1992 or pre-1993. Importantly, the internal Gini coefficient jumped significantly in 1993 while our time-consistent Gini coefficient did not. Note that the unadjusted public use CPS data reported in Figure 1A can not be used to trace the internal data for the reasons discussed above. (See Burkhauser et al 2004 for details.)

**Figure 1A. Gini Series for Household Income, 1979-2000.**



Source: Authors' computations from March CPS Annual Demographic Files and data from DeNavas-Walt and Cleveland (2002), Table A-3.

**Table 1. Household Size-Adjusted Income in the Total United States Population: 1979 to 2000 (2000 dollars)**

<b>Year</b>	<b>Mean Income</b>	<b>Median Income</b>	<b>90/10 Percent Ratio</b>	<b>Gini Coefficient</b>
<b>1979</b>	28,697	25,195	6.351	0.352
1980	27,256	23,944	6.550	0.353
1981	27,083	23,366	6.766	0.365
1982	27,087	23,146	7.430	0.375
1983	27,531	23,426	7.525	0.379
1984	28,810	24,222	7.534	0.384
1985	29,258	24,607	7.608	0.383
1986	30,341	25,505	7.770	0.385
1987	30,955	26,243	7.859	0.385
1988	31,195	26,201	7.883	0.386
<b>1989</b>	31,708	26,597	7.719	0.387
1990	30,820	25,855	7.784	0.385
1991	30,140	25,284	7.941	0.387
1992	29,969	25,161	8.132	0.390
1993	29,837	24,625	8.522	0.395
1994	30,385	25,085	8.236	0.394
1995	31,136	25,489	8.046	0.398
1996	31,565	25,846	8.129	0.399
1997	32,538	26,570	8.189	0.401
1998	33,141	27,485	7.972	0.392
1999	34,125	28,112	7.724	0.392
<b>2000</b>	34,334	28,500	7.656	0.387

Source: Authors' computations from the March CPS Annual Demographic Files.

**Table 2. Household Size-Adjusted Income in the Total United States Population: 1979 to 2000 (2000 dollars), by Sex.**

Year	Females				Males				
	Mean Income (1)	Median Income	90/10 Percent Ratio	Gini Coefficient	Mean Income (2)	Median Income	90/10 Percent Ratio	Gini Coefficient	Ratio (1)/(2)
<b>1979</b>	27,494	24,006	6.801	0.360	29,976	26,436	5.879	0.342	0.917
1980	26,105	22,894	6.876	0.360	28,481	25,056	6.067	0.345	0.917
1981	25,892	22,291	7.116	0.371	28,351	24,621	6.355	0.358	0.913
1982	26,033	22,183	7.680	0.381	28,208	24,196	7.004	0.368	0.923
1983	26,462	22,434	7.839	0.385	28,667	24,543	7.133	0.372	0.923
1984	27,762	23,219	7.868	0.390	29,923	25,212	7.066	0.377	0.928
1985	28,120	23,588	7.978	0.389	30,463	25,709	7.095	0.376	0.923
1986	29,090	24,333	8.176	0.392	31,666	26,814	7.257	0.376	0.919
1987	29,821	25,051	8.287	0.392	32,154	27,273	7.329	0.377	0.927
1988	30,018	25,166	8.257	0.392	32,439	27,330	7.340	0.379	0.925
<b>1989</b>	30,421	25,466	8.078	0.393	33,073	27,823	7.216	0.380	0.920
1990	29,684	24,747	8.319	0.393	32,024	26,901	7.238	0.377	0.927
1991	28,978	24,185	8.433	0.395	31,369	26,454	7.343	0.378	0.924
1992	28,781	24,073	8.559	0.397	31,223	26,309	7.572	0.381	0.922
1993	28,658	23,421	8.950	0.404	31,079	26,073	7.827	0.386	0.922
1994	29,144	23,817	8.705	0.402	31,689	26,423	7.701	0.386	0.920
1995	29,903	24,215	8.358	0.405	32,432	26,717	7.583	0.390	0.922
1996	30,306	24,545	8.594	0.408	32,881	27,258	7.657	0.390	0.922
1997	31,348	25,307	8.678	0.409	33,783	27,831	7.545	0.391	0.928
1998	31,843	26,175	8.375	0.400	34,505	28,836	7.472	0.383	0.923
1999	32,859	26,860	8.103	0.398	35,454	29,434	7.420	0.385	0.927
<b>2000</b>	33,202	27,365	7.994	0.394	35,522	29,698	7.295	0.380	0.935

Source: Authors' computations from the March CPS Annual Demographic Files.



**Table 3. Household Size-Adjusted Income in the Total United States Population: 1979 to 2000 (2000 dollars), by Race.**

Year	Black				Non-black				
	Mean Income (1)	Median Income	90/10 Percent Ratio	Gini Coefficient	Mean Income (2)	Median Income	90/10 Percent Ratio	Gini Coefficient	Ratio (1)/(2)
<b>1979</b>	18,554	14,947	8.330	0.404	30,020	26,494	5.678	0.339	0.618
1980	17,688	14,393	8.464	0.400	28,511	25,147	5.843	0.341	0.620
1981	17,118	13,721	8.805	0.407	28,405	24,663	6.069	0.353	0.603
1982	16,856	13,603	9.175	0.418	28,452	24,510	6.557	0.363	0.592
1983	17,299	13,695	9.772	0.425	28,905	24,826	6.726	0.366	0.598
1984	18,166	14,138	10.436	0.430	30,248	25,564	6.741	0.372	0.601
1985	18,847	14,736	10.613	0.424	30,661	25,889	6.866	0.372	0.615
1986	19,439	15,401	11.302	0.432	31,820	26,962	6.950	0.372	0.611
1987	19,846	15,502	11.598	0.440	32,470	27,589	6.980	0.372	0.611
1988	20,277	15,490	11.837	0.440	32,697	27,656	6.979	0.373	0.620
<b>1989</b>	20,570	16,107	11.524	0.437	33,251	27,997	6.865	0.375	0.619
1990	20,222	15,942	12.171	0.437	32,294	27,128	6.899	0.373	0.626
1991	19,668	15,283	12.486	0.443	31,606	26,630	7.015	0.374	0.622
1992	19,412	14,724	13.473	0.452	31,465	26,578	7.150	0.376	0.617
1993	19,606	14,598	13.218	0.456	31,298	26,177	7.470	0.382	0.626
1994	20,880	16,084	12.404	0.445	31,753	26,447	7.430	0.383	0.658
1995	20,864	16,339	11.021	0.434	32,605	26,823	7.412	0.388	0.640
1996	21,229	16,364	10.954	0.435	33,037	27,315	7.462	0.389	0.643
1997	22,144	17,525	10.491	0.427	34,028	27,897	7.509	0.392	0.651
1998	22,764	17,680	10.748	0.431	34,633	28,948	7.328	0.382	0.657
1999	24,742	19,556	10.474	0.430	35,472	29,442	7.253	0.383	0.698
<b>2000</b>	24,627	19,713	9.626	0.417	35,731	29,910	7.219	0.379	0.689

Source: Authors' computations from the March CPS Annual Demographic Files.

**Table 4. Household Size-Adjusted Income in the Total United States Population: 1979 to 2000 (2000 dollars), by Age.**

Year	65 and older				64 and younger				
	Mean Income (1)	Median Income	90/10 Percent Ratio	Gini Coefficient	Mean Income (2)	Median Income	90/10 Percent Ratio	Gini Coefficient	Ratio (1)/(2)
<b>1979</b>	21,216	16,069	6.081	0.391	29,611	26,372	6.141	0.342	0.716
1980	21,094	15,766	6.109	0.394	28,014	24,992	6.377	0.344	0.753
1981	21,838	16,212	6.303	0.402	27,738	24,326	6.712	0.358	0.787
1982	22,862	17,004	6.371	0.407	27,621	23,991	7.520	0.369	0.828
1983	22,993	17,617	6.227	0.394	28,112	24,273	7.714	0.375	0.818
1984	24,478	18,169	6.321	0.404	29,370	24,959	7.735	0.380	0.833
1985	24,151	18,365	6.201	0.399	29,925	25,521	7.799	0.379	0.807
1986	24,932	18,859	6.431	0.404	31,059	26,569	7.939	0.380	0.803
1987	24,855	18,929	6.444	0.402	31,772	27,273	7.950	0.380	0.782
1988	25,252	18,840	6.639	0.408	31,999	27,293	7.987	0.380	0.789
<b>1989</b>	25,988	19,082	6.708	0.418	32,491	27,778	7.759	0.380	0.800
1990	25,928	19,418	6.698	0.413	31,495	26,689	7.870	0.379	0.823
1991	24,848	18,909	6.377	0.406	30,875	26,325	8.152	0.382	0.805
1992	24,366	18,324	6.271	0.406	30,746	26,273	8.341	0.384	0.792
1993	24,445	18,313	6.405	0.406	30,565	25,747	8.784	0.391	0.800
1994	24,641	18,182	6.331	0.406	31,165	26,280	8.521	0.390	0.791
1995	25,598	18,821	6.176	0.409	31,891	26,554	8.284	0.394	0.803
1996	25,844	18,913	6.465	0.412	32,343	27,050	8.369	0.395	0.799
1997	26,991	19,570	6.664	0.42	33,290	27,660	8.383	0.395	0.811
1998	26,758	19,960	6.569	0.403	34,007	28,640	8.150	0.388	0.787
1999	27,322	20,399	6.577	0.403	35,046	29,431	7.850	0.387	0.780
<b>2000</b>	26,728	20,191	6.586	0.405	35,367	29,902	7.670	0.381	0.756

Source: Authors' computations from March CPS Annual Demographic Files.

**Table 5. Household Size-Adjusted Income in the United States: 1979 to 2000 (2000 dollars), Single Mothers and Mothers in Two-Parent Households with a Child Aged 17 or Younger.**

Year	Single Mothers				Mothers in Two-Parent Households				
	Mean Income (1)	Median Income	90/10 Percent Ratio	Gini Coefficient	Mean Income (2)	Median Income	90/10 Percent Ratio	Gini Coefficient	Ratio (1)/(2)
<b>1979</b>	14,008	11,417	8.495	0.402	28,882	26,595	4.313	0.293	0.485
1980	13,283	10,530	8.207	0.410	27,153	25,042	4.522	0.296	0.489
1981	13,006	10,398	8.591	0.414	26,826	24,450	4.795	0.309	0.485
1982	12,479	9,279	9.561	0.437	26,718	24,107	5.217	0.323	0.467
1983	12,477	9,384	10.065	0.438	27,163	24,235	5.421	0.331	0.459
1984	12,954	9,814	10.111	0.439	28,598	25,290	5.38	0.333	0.453
1985	13,359	9,956	10.284	0.448	29,141	25,714	5.348	0.334	0.458
1986	13,390	9,503	11.264	0.456	30,452	26,812	5.316	0.333	0.440
1987	14,219	10,073	11.771	0.463	31,062	27,424	5.321	0.333	0.458
1988	13,881	10,253	11.825	0.457	31,119	27,574	5.331	0.331	0.446
<b>1989</b>	14,697	10,888	11.726	0.458	31,377	27,796	5.416	0.332	0.468
1990	13,926	10,236	10.972	0.451	30,567	26,797	5.528	0.332	0.456
1991	13,749	9,903	12.015	0.456	30,104	26,800	5.578	0.332	0.457
1992	13,472	9,912	11.877	0.461	30,333	27,017	5.65	0.333	0.444
1993	13,246	9,660	11.057	0.458	30,636	26,971	6.082	0.343	0.432
1994	14,261	10,453	11.444	0.455	31,110	27,538	5.936	0.341	0.458
1995	15,142	11,243	10.791	0.447	32,446	28,062	5.75	0.35	0.467
1996	14,646	11,164	10.616	0.445	32,749	28,266	5.843	0.348	0.447
1997	15,503	11,803	11.838	0.457	33,750	29,077	5.789	0.349	0.459
1998	15,726	12,193	11.021	0.437	34,383	29,995	5.777	0.345	0.457
1999	16,863	12,916	11.792	0.444	35,309	30,699	5.844	0.344	0.478
<b>2000</b>	17,370	13,725	9.818	0.422	36,016	31,300	5.782	0.342	0.482

Source: Authors' computations from March CPS Annual Demographic Files.

**Table 6. Household Size-Adjusted Income in the Total United States Population: 1979 to 2000 (2000 dollars), by Welfare Benefits in the Household.**

Year	Welfare Benefits				No Welfare Benefits				Ratio (1)/(2)
	Mean Income (1)	Median Income	90/10 Percent Ratio	Gini Coefficient	Mean Income (2)	Median Income	90/10 Percent Ratio	Gini Coefficient	
<b>1979</b>	12,435	8,998	7.021	0.405	30,350	26,777	5.218	0.330	0.410
1980	11,419	8,320	6.551	0.400	28,907	25,479	5.320	0.330	0.395
1981	11,049	8,010	6.605	0.407	28,745	25,009	5.499	0.343	0.384
1982	9,961	6,927	6.617	0.414	28,765	24,827	5.864	0.352	0.346
1983	10,123	6,902	7.642	0.430	29,256	25,138	5.978	0.355	0.346
1984	10,295	7,053	7.739	0.434	30,682	25,958	5.925	0.359	0.336
1985	11,120	7,363	8.219	0.442	31,095	26,361	5.974	0.359	0.358
1986	11,265	7,405	8.694	0.452	32,247	27,389	6.097	0.361	0.349
1987	10,914	7,184	8.968	0.458	32,856	27,899	6.151	0.361	0.332
1988	11,059	7,274	8.798	0.451	33,084	27,972	6.282	0.363	0.334
<b>1989</b>	11,816	7,847	9.212	0.455	33,602	28,393	6.255	0.364	0.352
1990	11,548	7,731	9.033	0.453	32,824	27,693	6.157	0.361	0.352
1991	11,063	7,522	9.235	0.448	32,311	27,334	6.142	0.360	0.342
1992	11,660	7,822	9.559	0.463	32,111	27,332	6.311	0.363	0.363
1993	11,621	7,934	9.037	0.453	32,046	26,918	6.544	0.369	0.363
1994	11,721	8,087	8.718	0.451	32,441	27,244	6.481	0.370	0.361
1995	12,579	8,742	8.562	0.444	33,186	27,585	6.546	0.376	0.379
1996	12,345	8,626	8.610	0.437	33,544	27,827	6.713	0.378	0.368
1997	12,665	8,675	9.545	0.452	34,311	28,188	6.797	0.382	0.369
1998	13,201	8,983	9.544	0.452	34,690	29,039	6.829	0.376	0.381
1999	14,722	10,339	8.867	0.442	35,564	29,618	6.915	0.378	0.414
<b>2000</b>	14,756	10,586	8.925	0.439	35,602	29,796	6.907	0.375	0.414

Source: Authors' computations from March CPS Annual Demographic Files.

Note: Welfare benefits include: income from Supplemental Security Income and Public Assistance.

**Table 7. Household Size-Adjusted Income of Working Age United States Population (Aged 25-61): 1979 to 2000 (2000 dollars), by Education.**

Year	Less Than High School					High School					More than High School			
	Mean Income (1)	Median Income	90/10 Percent Ratio	Gini Coefficient	Ratio (1)/(3)	Mean Income (2)	Median Income	90/10 Percent Ratio	Gini Coefficient	Ratio (2)/(3)	Mean Income (3)	Median Income	90/10 Percent Ratio	Gini Coefficient
<b>1979</b>	20,654	17,173	6.308	0.368	0.524	30,665	27,774	4.695	0.308	0.778	39,405	35,230	4.609	0.312
1980	19,421	16,048	6.193	0.369	0.517	29,039	26,203	4.87	0.312	0.772	37,600	33,991	4.640	0.308
1981	19,055	15,689	6.129	0.371	0.502	28,399	25,489	5.104	0.324	0.748	37,969	33,598	5.081	0.325
1982	18,445	15,152	6.279	0.375	0.480	27,999	25,061	5.398	0.332	0.729	38,429	33,831	5.047	0.329
1983	18,739	15,128	6.616	0.383	0.480	28,126	24,972	5.497	0.334	0.720	39,054	34,685	5.159	0.327
1984	19,610	15,920	6.522	0.385	0.482	29,317	25,730	5.557	0.34	0.720	40,696	35,116	5.240	0.339
1985	19,394	15,710	6.619	0.385	0.467	29,258	25,760	5.597	0.339	0.705	41,528	36,000	5.305	0.335
1986	19,775	15,966	6.791	0.388	0.457	29,966	26,506	5.578	0.337	0.693	43,244	37,560	5.302	0.336
1987	20,142	16,097	7.125	0.395	0.460	30,475	26,879	5.565	0.339	0.695	43,821	38,258	5.202	0.334
1988	19,807	15,826	6.893	0.390	0.448	30,524	26,761	5.686	0.342	0.690	44,224	38,407	5.172	0.333
<b>1989</b>	19,990	15,719	6.831	0.394	0.445	30,897	27,041	5.657	0.343	0.687	44,944	38,890	5.229	0.337
1990	19,190	15,614	6.744	0.386	0.439	29,945	26,269	5.663	0.342	0.686	43,683	37,887	5.099	0.334
1991	18,421	14,892	6.942	0.391	0.440	28,809	25,284	5.677	0.342	0.688	41,895	36,494	5.276	0.336
1992	17,956	14,527	6.733	0.389	0.433	28,093	24,808	5.874	0.345	0.677	41,487	36,062	5.431	0.339
1993	17,630	14,150	6.795	0.390	0.431	27,811	24,085	6.082	0.352	0.680	40,882	35,572	5.736	0.345
1994	17,895	14,225	6.927	0.393	0.435	28,309	24,350	6.057	0.356	0.689	41,101	35,540	5.681	0.346
1995	18,279	14,584	6.634	0.390	0.435	28,847	24,656	5.799	0.354	0.687	41,996	35,868	5.871	0.354
1996	18,717	14,685	6.616	0.399	0.438	29,005	24,856	5.927	0.356	0.679	42,717	36,443	5.937	0.354
1997	19,057	14,867	6.931	0.404	0.434	29,659	25,450	5.941	0.359	0.676	43,887	37,113	5.948	0.357
1998	19,254	15,240	6.748	0.393	0.434	30,023	26,078	6.062	0.353	0.677	44,328	38,120	5.795	0.346
1999	19,496	15,646	6.342	0.384	0.429	30,588	26,269	6.020	0.356	0.674	45,407	39,210	5.812	0.348
<b>2000</b>	20,007	16,071	6.449	0.389	0.444	30,519	26,269	5.981	0.352	0.677	45,059	38,905	5.847	0.347

Source: Authors' computations from March CPS Annual Demographic Files.

**Table 8. Shares of Sub-Populations in the Total United States Population: 1979 to 2000.**

Year	Female	African American	Over 65	Welfare Benefits	One-Parent Mothers	Two-Parent Mothers	Education* Less than High School	Education* High School	Education* More than High School
<b>1979</b>	0.515	0.115	0.109	0.092	0.041	0.194	0.239	0.401	0.360
1980	0.516	0.116	0.110	0.094	0.041	0.191	0.229	0.408	0.363
1981	0.516	0.117	0.111	0.094	0.043	0.185	0.218	0.408	0.373
1982	0.515	0.118	0.112	0.089	0.042	0.183	0.210	0.403	0.388
1983	0.515	0.118	0.113	0.090	0.042	0.181	0.199	0.407	0.394
1984	0.515	0.119	0.115	0.092	0.043	0.178	0.192	0.405	0.404
1985	0.514	0.119	0.115	0.092	0.043	0.178	0.185	0.405	0.410
1986	0.514	0.119	0.117	0.091	0.043	0.176	0.179	0.406	0.415
1987	0.514	0.120	0.118	0.087	0.043	0.174	0.177	0.403	0.420
1988	0.514	0.121	0.119	0.086	0.043	0.172	0.171	0.398	0.431
<b>1989</b>	0.515	0.122	0.120	0.087	0.044	0.171	0.164	0.398	0.437
1990	0.514	0.122	0.121	0.094	0.045	0.169	0.160	0.397	0.443
1991	0.514	0.123	0.122	0.102	0.046	0.167	0.153	0.364	0.483
1992	0.513	0.124	0.122	0.105	0.047	0.167	0.145	0.355	0.500
1993	0.513	0.125	0.119	0.108	0.049	0.169	0.143	0.344	0.513
1994	0.513	0.126	0.120	0.099	0.048	0.167	0.137	0.338	0.525
1995	0.513	0.125	0.120	0.099	0.049	0.165	0.139	0.334	0.526
1996	0.511	0.125	0.120	0.093	0.049	0.164	0.136	0.335	0.529
1997	0.512	0.125	0.120	0.082	0.047	0.163	0.131	0.333	0.536
1998	0.512	0.126	0.119	0.072	0.048	0.160	0.127	0.328	0.545
1999	0.512	0.126	0.119	0.069	0.046	0.160	0.121	0.324	0.554
<b>2000</b>	0.512	0.126	0.120	0.061	0.044	0.159	0.120	0.319	0.561

Source: Authors' computations from March CPS Annual Demographic Files.

\*Sample population is limited to those aged 25-61.

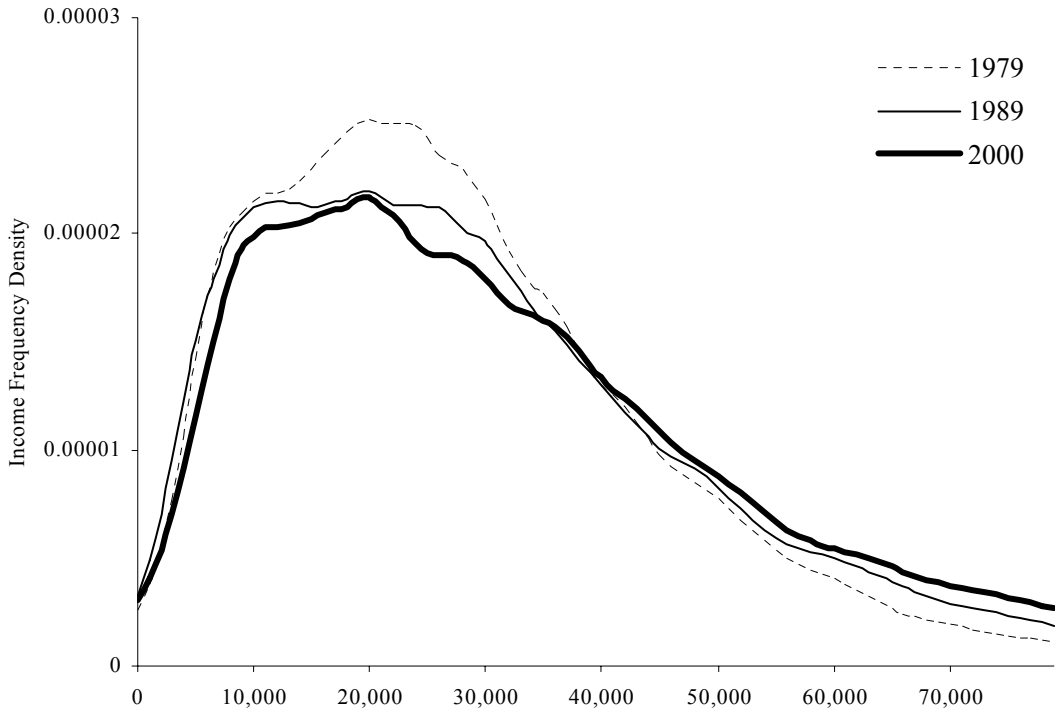
**Table 9. Kolmogorov-Smirnov Test of Difference in Sample Populations.**

Group	Kolmogorov-Smirnov Test statistic		
	Comparison Years		
	1979 versus 1989	1989 versus 2000	1979 versus 2000
Total Population	5.550	3.100	5.750
Black	2.425	2.750	4.975
Non-Black	4.025	3.250	4.300
Males	4.000	2.400	4.175
Females	4.050	2.725	5.350
Aged 64 and younger	3.875	2.800	4.375
Aged 65 and older	2.275	2.000	3.575
Single-Parent Mothers	4.400	1.550	4.850
Two-Parents Mothers	3.425	4.300	4.825
Welfare Household	3.275	3.175	4.750
Not a Welfare Household	3.675	2.850	4.250
Less than High School Education	1.025 (p=0.2442)	0.950 (p=0.3275)	1.300 (p=0.0681)
High School Education Only	2.925	1.325 (p=0.0597)	1.850
More than High School Education	4.100	3.200	5.300

Source: Authors' estimations based on data from the March CPS Annual Demographic Files.

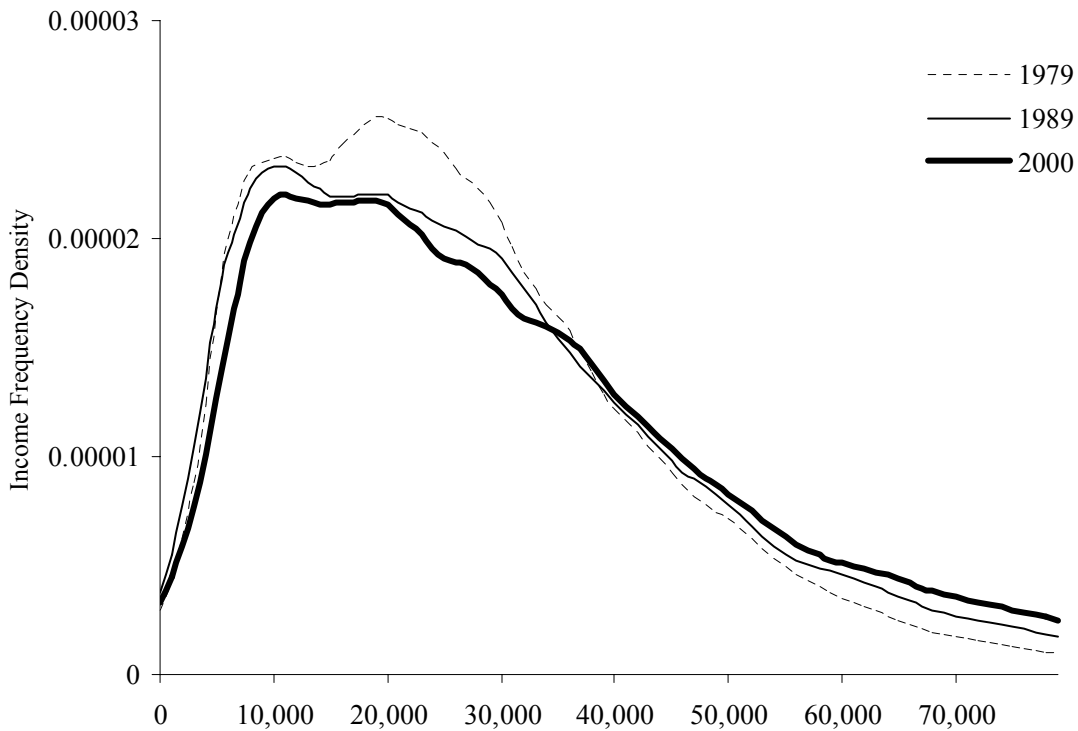
Note: All test statistics are significant at 1 percent level except those where corresponding p-values is shown in parentheses.

**Figure 1. The Income Distribution in the United States Population in 1979, 1989, and 2000.**



Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

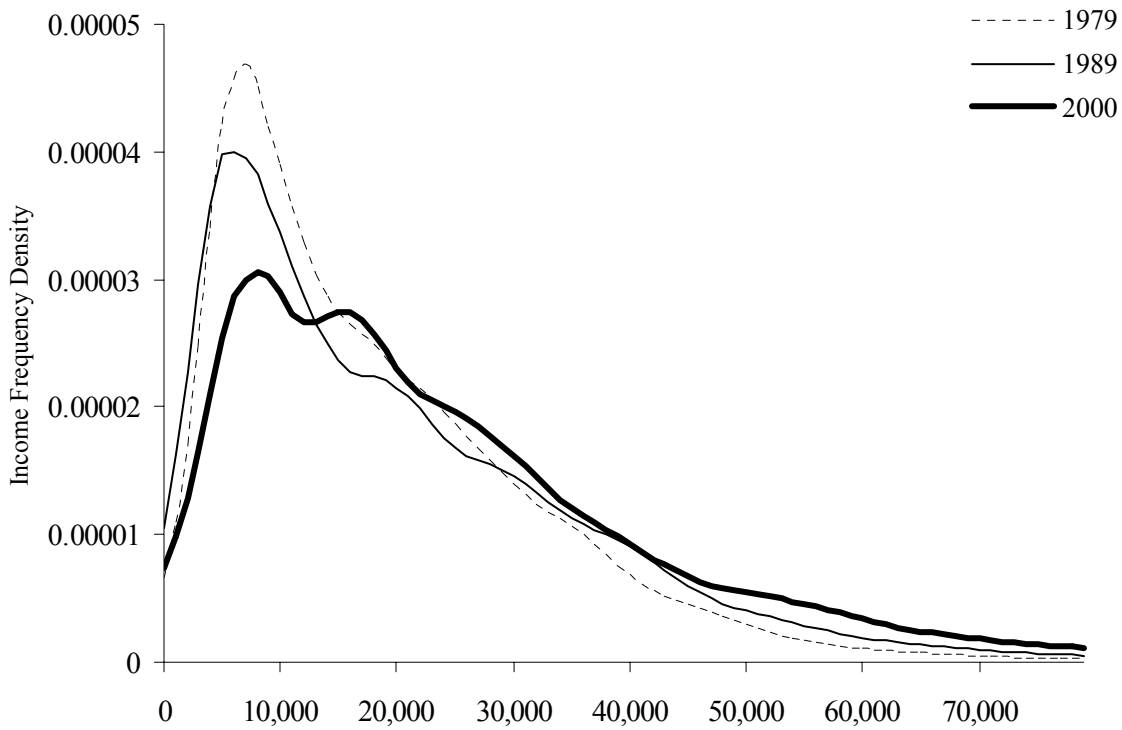
**Figure 2. The Income Distribution in the United States Population in 1979, 1989, and 2000: Females.**



Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

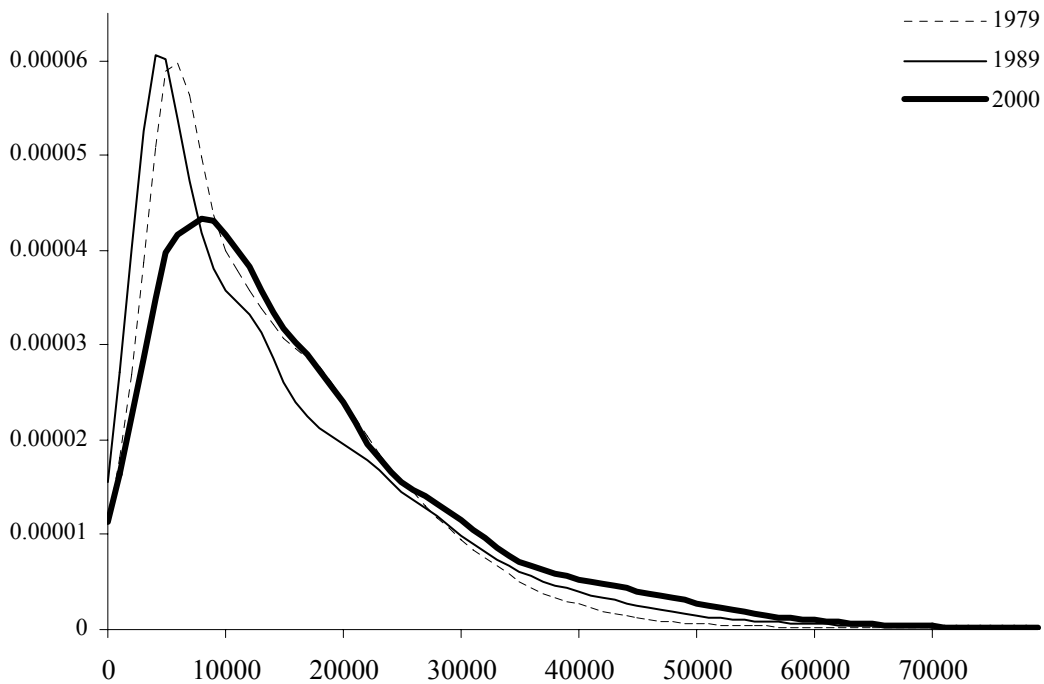


**Figure 3. The Income Distribution in the United States Population in 1979, 1989, and 2000: Blacks**



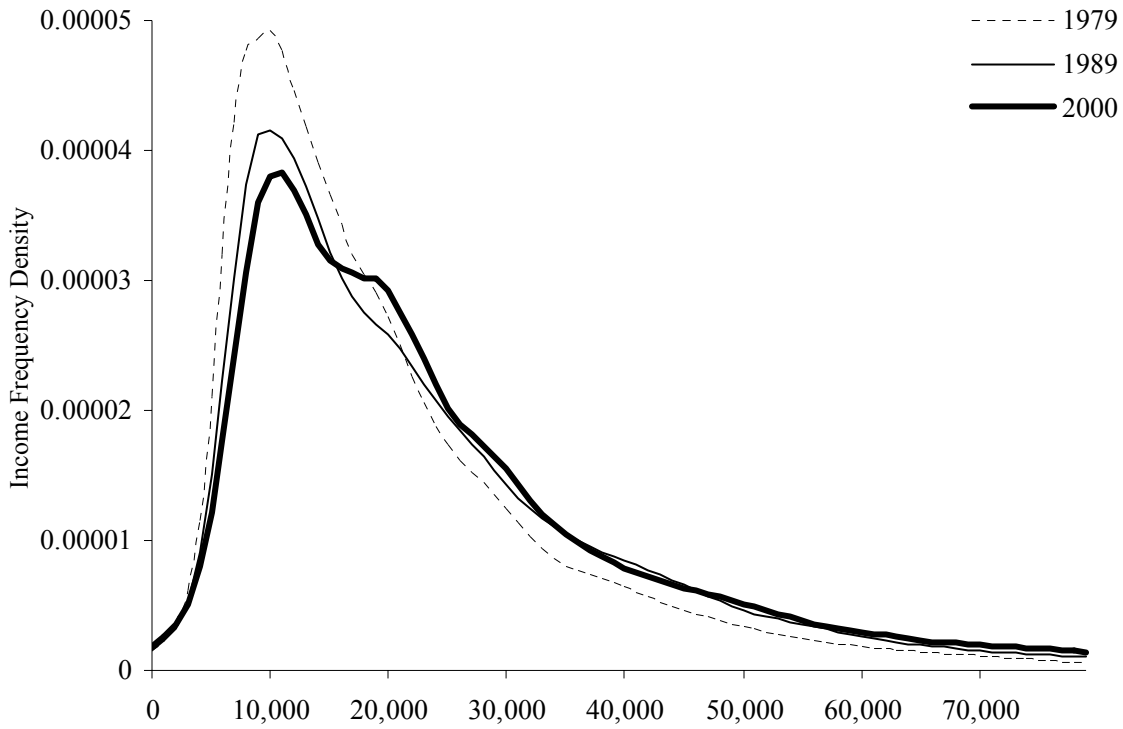
Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

**Figure 4. The Income Distribution in the United States Population in 1979, 1989, and 2000: Single Mothers with Children Aged 17 and Younger**



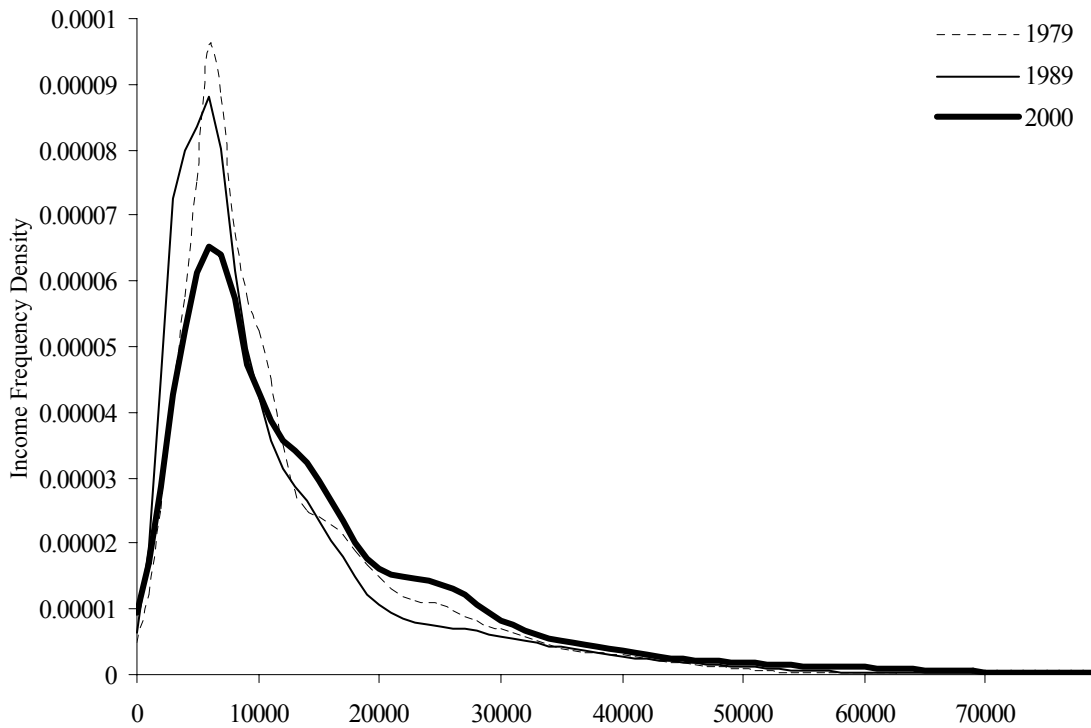
Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

**Figure 5. The Income Distribution in the United States Population in 1979, 1989, and 2000: Aged 65 and Older.**



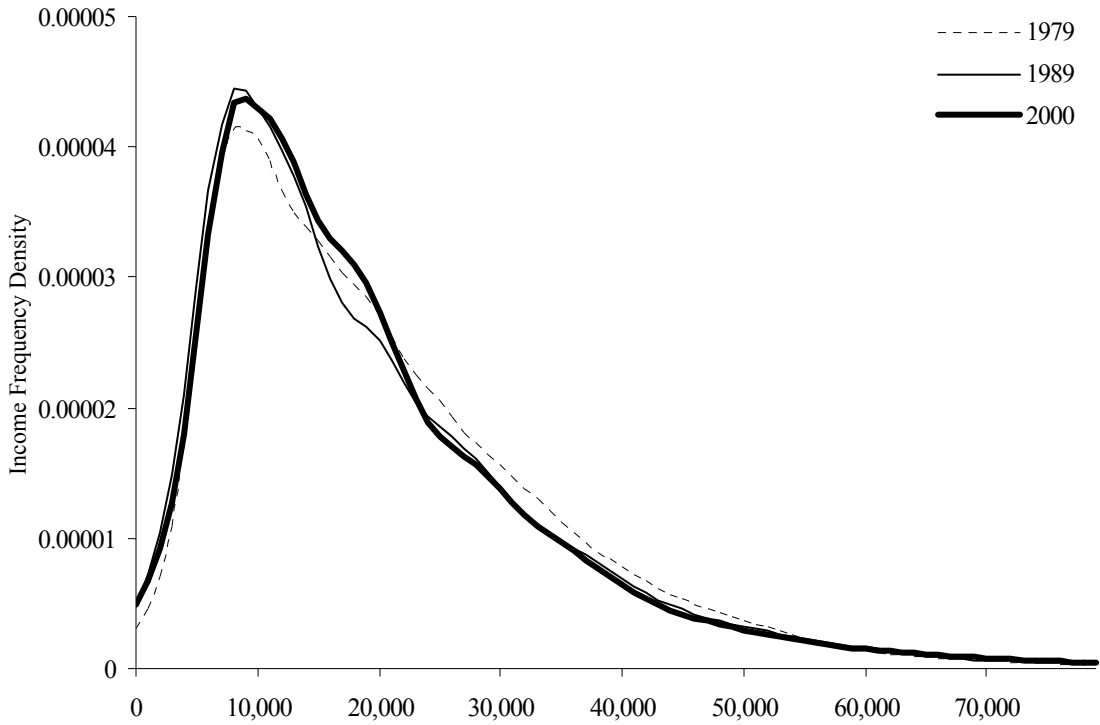
Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

**Figure 6. The Income Distribution in the United States Population in 1979, 1989, and 2000: Members of Households Receiving Welfare Payments**



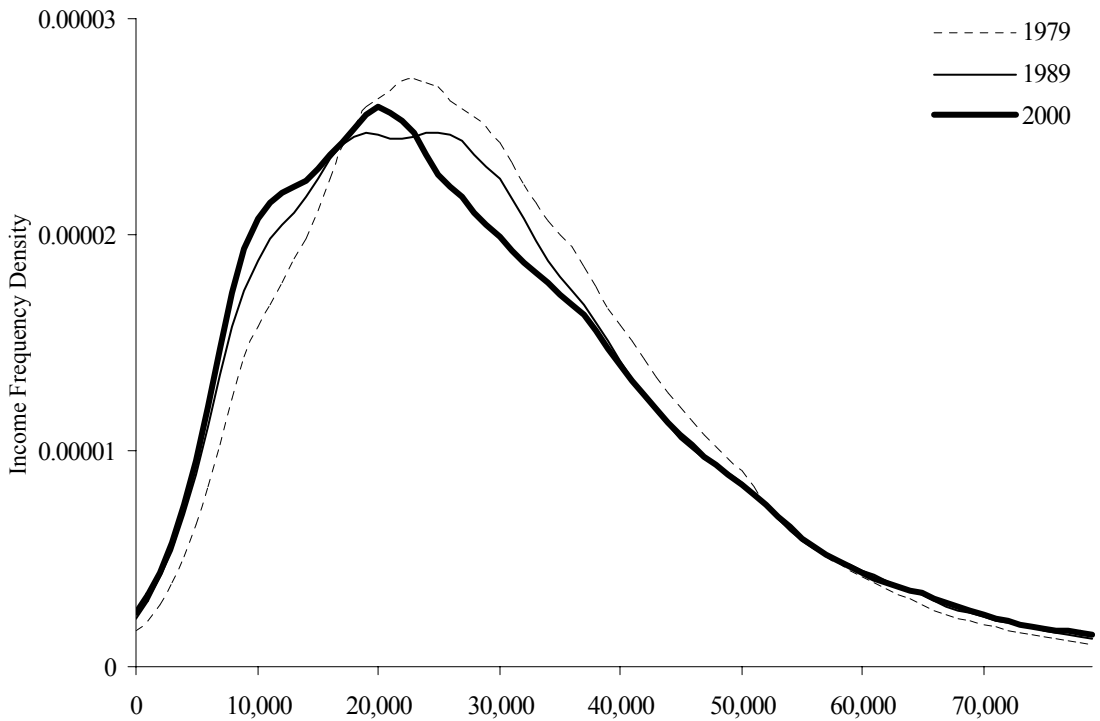
Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

**Figure 7. The Income Distribution in the United States Population in 1979, 1989, and 2000: Working Age (25-61) Individuals with Less than a High School Education.**



Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

**Figure 8. The Income Distribution in the United States Population in 1979, 1989, and 2000: Working Age (25-61) Individuals with a High School Education Only.**



Individual Equivalent Pre-tax Post-Transfer Household Income, 2000 Dollars

## Endnotes

1. In the United States, the family (all married or blood relatives who live in a common dwelling) or the household (all residents living in a common dwelling) are the sharing units most often used by those estimating income inequality or poverty rates. Income within the sharing unit is assumed to be shared equally and some degree of returns to scale in the use of that income is assumed to be experienced by those who live together. Each individual in the sharing unit is then assigned a family or household size-adjusted income value. Atkinson, Rainwater and Smeeding (1995) and Burkhauser, Crews, and Daly (1997) argue that assuming a family level sharing unit will produce a bleaker picture of the income distribution because this assumption will treat a larger number of individuals as single-person households even when they reside and share the benefits of living with others. Burkhauser, Crews, Daly and Jenkins (1999) show that the changes found by researchers in the distribution of income in the 1980s are similar using either a family or household sharing unit.
2. Burkhauser, Butler, Feng and Houtenville (2004) argue that despite the changes in the methods the Census Bureau has used to collect and report earnings between 1975 and 2001 (see Ryscavage 1995, Polivka 1996, and Jones and Weinberg 2000) in the March CPS data, these data can be used to consistently estimate trends in earnings inequality. We extend the top coding procedure Burkhauser et al (2004) used to capture earnings to capture household size-adjusted income. Our income measure produces Gini coefficients that are significantly lower than those for the full sample since we are systematically cutting off the upper tail of the distribution of income in all years, but as we show in the appendix there is no significant difference in the trends between the Gini coefficients produced by the Census Bureau based

on their internal CPS data and our Gini coefficients both before the major change in their top coding rules in 1992 and afterward. (See: DeNavas-Walt and Cleveland 2002, p.20-22, Table A-3, for internal Census Gini values.) Our results mirror the results found by Burkhauser et al (2004) with respect to earnings. Hence we believe our income trends provide an accurate measure of income inequality in the United States between 1979 and 2000. (See the Appendix for more details of this analysis.)

3. The formula used for this calculation is  $Y_a = Y_u / F^\theta$ . Here,  $Y_a$  is the adjusted household income used in the analysis.  $Y_u$  is the unadjusted household income.  $F$  is household size.  $\theta$  is the adjustment for household size. We assume  $\theta = 0.5$ . As discussed in Karoly and Burtless (1995, p. 382), this implies that a four person household needs twice as much income as a one person household to attain the same level of consumption.
4. The starting and ending years of a business cycle are to some degree arbitrary. We take advantage of a clear trend in income to define our peak, trough, and peak years of the 1980s and 1990s business cycles. Because employment and income lag changes in economic growth these years do not necessarily match business cycles defined by changes in macroeconomic growth.
5. The welfare reform legislation of 1996 had a profound effect on the employment earnings of single mothers with children aged 17 and younger. For a detailed discussion of the law and its effects on single mothers see Blank (2002).
6. These estimates are based on Epanechnikov kernels with adaptive bandwidths.