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Recent Changes in Earnings Distributions in the United States

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Abstract

In this paper I use large, Social Security administrative data sets to examine changes in earnings distributions in the U.S. over the 1980s and early-1990s. Because the earnings information contained in these data sets comes directly from the W-2 forms filed by employers, self-reporting errors and top-coding problems, common in other data used for this type of analysis, are minimized. Previous research has documented an increase in overall earnings inequality during the 1970s and the 1980s. While I too find that overall earnings inequality generally increased during the early- to mid-1980s, I find that this upward trend in earnings inequality might have slowed, or reversed, during the late-1980s and early-1990s. I also find that within-group inequality for various race and/or gender subgroups of the population generally increased over the period examined, confirming the results of others and extending those findings into the early-1990s. Finally, I find that female earnings increased relative to male earnings over the entire period, while the earnings of black males declined relative to the earnings of the other groups examined.

I. Introduction

Earnings have traditionally served as one measure of a person's well-being. Other things equal, an increase in an individual's earnings is generally thought to signify an improvement in that individual's lot. Likewise, at a group or national level, increases in average earnings are often viewed as an indication that the group or nation is, in some sense, better off than before the increase. Increasing earnings disparity among groups is commonly viewed as being bad, however. An increase in the earnings of one group relative to those of another group could mean that society as a whole is worse off, depending on one's point of view. Examining changes in earnings distributions provides us with insights into the welfare of individuals and groups in society. In addition, the ability to forecast earnings plays a central role in accurately projecting the future status of Social Security's OASDI Trust Funds. One part of developing an earnings forecast involves understanding how past earnings distributions have changed over time, with the hope that this understanding will provide insights as to what to expect in the future. This paper will describe the changes in earnings distributions in the U.S. for the population as a whole, as well as for gender and racial subgroups of the population, for the period 1981 through 1993, using an unusually large sample derived from Social Security Administration (SSA) earnings records.

Much has been written in the economics literature regarding the observed changes in earnings distributions in the U.S. over the 1980s. Levy and Murnane (1992), in their survey article that deals with earnings trends and with earnings inequality, state, "Nineteen-hundred-seventy-nine marked the beginning of a sharp acceleration in the growth of earnings inequality, particularly among men."[1] With many different measures of inequality and using many different

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[1]Levy and Murnane (1992), pg. 1333.

datasets, researchers detected a pattern of increasing earnings (and income) inequality over the 1980s, both in the overall population as well as in subgroups of that population.

Blackburn, Bloom and Freeman (1990/1991), using data from March Current Population Surveys (CPS), found that overall earnings inequality increased over the 1980s while average earnings changed little over the same period. Cutler and Katz (1992) compared changes in income distributions over the 1980s with changes in the distributions of consumption over the same period by using CPS data (for income distributions) and Consumer Expenditure Survey (CES) data (for information on consumption patterns). They observed that there had been an increase in inequality in both income and consumption distributions over that period. Karoly (1992) found, using CPS data, that ten different measures of earnings inequality showed declining or stable inequality prior to about 1979, but increasing earnings inequality thereafter. Many others have found similar results regarding earnings inequality for the overall population, as shown in Levy and Murnane (1992).

Going beyond examining earnings distributions for the entire population, many papers have documented and attempted to explain within- and between-group differences for various subgroups of the population. Smith and Welch (1989) took a comprehensive look at changes in the economic lot of black males over the period 1940 to 1980. They concluded that there was considerable progress made in narrowing the wage gap between races, but that race was still an important predictor of a male's earnings. Furthermore, they found evidence that blacks were increasingly dividing into two classes--a middle class that was making significant economic progress and an underclass that was being left behind. Juhn, Murphy, and Pierce (1991) found that, while the wage gap between black and white workers narrowed considerably between 1963 and 1979, this trend reversed during the 1980s as black workers actually lost ground to white

workers.[2] Bound and Freeman (1992) found a widening of the black/white earnings gap from the mid-1970s through the 1980s which was due, they felt, to shifting industry and regional employment, to a fall in the real minimum wage, to the decreasing influence of unions, to the growing supply of black college graduates relative to white college graduates, and to the increased prevalence of crime among black high school dropouts.

By most accounts, females made large gains in relative earnings over the 1980s. Gunderson (1989) found that among full-time, year-round workers, women's median earnings increased from 58% of men's median earnings in 1979 to 67% in 1987 in the U.S. His paper also showed that in the aggregate the male/female wage gap narrowed over the period 1960 to 1980 in most of the free-market economies in the world *except* in the U.S., where the gap only began to narrow more recently.[3] Katz and Murphy (1992) argued that the shift in industrial employment distribution out of "low tech" and "basic" manufacturing into professional and business services suggested that there may have been a demand shift in favor of college graduates and women and against less-educated males that would help to explain the decreasing male/female wage gap. O'Neill (1985) indicated that the increase in highly educated women entering the labor force in the late 1970s and the 1980s also helped close the male/female wage gap.

There have also been many studies which examined within-group inequality changes. Most of these attempt to explain why male within-group inequality increases from the late 1960s onward. Katz and Murphy (1992) observed that within-group earnings inequality, where the

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[2]They argue that this slowdown in wage convergence simply reflects a more general trend of growing wage inequality. That is, if black workers, on average, are more poorly educated and have less marketable skills, then they will tend to be left behind in an environment of increasing wage inequality due to education or skill level differences between workers.

[3]Gunderson indicated that when skills and attributes are controlled for, the male/female wage gap in the U.S. began narrowing in the early 1970s.

groups are defined by education, age/experience level, and gender, was 30% higher in 1987 than in 1970. Blackburn (1990) used March CPS data to conclude that a rise in the rate of return to education, changes in the relationship between age and education among males, changes in the age composition of the labor force, and a decline in the marriage rate among younger males all contributed to increasing earnings inequality among males over the period 1967 to 1985. Burtless (1990) contended that the increase in male earnings inequality could not be connected to changes in demographic variables, but rather that the pay of men with similar characteristics had become more unequal over time. Dooley and Gottschalk (1984), using CPS data from the 1968 through 1979 surveys, argued that, even after controlling for education, experience, and the unemployment rate, earnings inequality among male labor force cohorts increased over the period of the study, meaning that changes in the relative earnings of young to older workers or growth in the proportion of younger workers did not account for the increasing inequality among males. Despite the many attempts made to understand within-group earnings inequality growth, to date this phenomenon is not well understood as none of the studies have been able to account for the increases detected.

In this paper, I describe changes in earnings distributions over the period 1981-93, for the overall population as well as by race and gender subgroups, using data extracted from the Social Security Administration's earnings records. Since these data have not been extensively used for this type of research in recent years, Section II of the paper describes them thoroughly. These data offer several advantages over the typical public-use survey dataset, as indicated in the next part of the paper. Section III contains a description of the methods used to examine changes in the patterns of earnings distributions over the period. Gini indices have long been used to examine earnings inequality issues. Two relatively recent innovations regarding the Gini index,

used heavily in this paper, are introduced in this third section. The results presented in Section IV show, as do nearly all of the papers discussed in this introduction, that earnings inequality increased over the early 1980s to the mid-1980s. However, there is some indication that this trend of rising earnings inequality in the U.S. might have slowed, or even reversed, in the late 1980s and early 1990s. Although certainly more work is needed, the findings presented here do raise the question "Is earnings inequality in the U.S. still increasing?" Section V concludes the paper.

II. Data Description

I use a subset of files from the Social Security Administration's Continuous Work History Sample (CWHS) family of files for this project. In particular, I use the one-percent sample 1957-1989 Longitudinal Employee-Employer Data (LEED) file and the 1990, 1991, 1992, and 1993 files from the one-percent sample annual Employee-Employer (EE-ER) file series in order to examine earnings distributions over the period 1981-93. When used in combination with the CWHS one-percent sample Active file,[4] I have information on the year of birth, gender,[5] race, annual Social Security taxable wages, and total wage compensation for a one-percent sample of

[4]The CWHS Active file is a one-percent sample of all individuals with Social Security numbers who have a record of earnings posted to SSA's Master Earnings File.

[5]All observations with the gender variable listed as "unknown," fewer than 40 observations in any given year, were eliminated from the sample.

social security numbers (SSNs) for which wage and salary employment was reported over the period 1981-93.[6] [7]

I chose to explore the interval 1981-93 for two reasons. Increasing earnings inequality over the 1970s and the early to mid-1980s has been well documented in numerous studies,[8] while there is much less work covering the late 1980s and early 1990s. By examining distributions over 1981-93, I am able to corroborate the results of other studies for the period of the early to mid-1980s, while using a consistent method to study possible changes in the earnings distributions from more recent years.

A second reason for choosing the period 1981-93 arises because of limitations in the Social Security Administration's administrative data themselves. In 1978, a change from quarterly wage reporting to annual wage reporting took place. As part of this change, total wage and salary compensation (taken directly from the W-2 information reported by employers to SSA) became available within the CWHS family of files.[9] However, as with any major modification, there were difficulties in the years immediately following the change to annual wage reporting

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[6]These files also contain other information and information for additional years not directly relevant to this study. For a more comprehensive introduction to the CWHS family of files see Smith (1989).

[7]I do not include self-employment income in my analysis. The Social Security Administration receives information on self-employment income only to the extent that it is taxable for OASDI purposes.

[8]As indicated in the introduction of the paper, see Levy and Murnane (1992).

[9]Prior to 1978 there is an estimate of total earnings based on taxable earnings up to the taxable maximum. For those individuals at or above the taxable maximum, the estimate of total earnings was derived from the value of the taxable maximum combined with information regarding the quarter in which the individual's taxable earnings reached the taxable maximum.

with late posting, duplicate reports, and other processing problems. In order to avoid possible problems with this transition period, I elected to use 1981 as the earliest year in the study.[10]

Using data from the CWHS family of files provides several advantages over the data typically used for this type of research. First and foremost, because they come directly from the W-2 form, the CWHS earnings data do not exhibit any of the "self-reporting" problems which have the potential for being present in most, if not all, public-use surveys. In particular, it is believed that individuals toward the upper end of the earnings distribution have a higher tendency to incorrectly report their earnings in surveys, which is troublesome when the point is to examine earnings distributions. Data from the CWHS do not have this problem since individuals generally do not have a choice regarding what is reported on their W-2 forms.[11]

A second advantage of using data from the CWHS family of files is that the earnings data are not top-coded. Public-use datasets top-code earnings in an effort to help mask the identity of individuals with high earnings who otherwise might be identifiable with a combination of their actual earnings and other characteristics in the file. The Annual Demographic Survey (March CPS Supplement) of the Current Population Survey (CPS), for example, presently top-codes wage and salary earnings so that an individual does not show earnings in any one job of more than $100,000 per year.[12] The percentage of individuals in a survey affected by this can vary from year

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[10]I spent a great deal of time running consistency checks and testing the data in general to determine their fitness for use in this type of exercise. Many of my questions about or problems with the data were cleared up by Creston Smith and his colleagues in SSA's Office of Research, Evaluation, and Statistics' Division of Earnings Statistics and Analysis.

[11]Individuals generally have a difficult time legally preventing their actual wage and salary earnings from appearing on their W-2 forms except to the extent that they can contribute to tax-deferred saving plans or to the extent that they participate in the "underground" economy.

[12]In fact, for several years covered by this paper, the top-code limit for wage and salary earnings in the March CPS Supplements was $75,000.

to year, which means top-coding alone, other things equal, could cause measures of earnings inequality to vary from year to year. Given that one of my objectives is to make accurate observations regarding the fluctuations in earnings distributions from year to year, using data that are not top-coded is important.

A third advantage of the CWHS is the large number of observations available. For the LEED and EE-ER files, a one-percent sample, based on specified digits from the last four digits of the SSN, of those with wage and salary earnings in the specified year(s) is drawn from Social Security's records. Sample sizes for the years studied range from about 970,000 to about 1.3 million observations, depending on the year in question.[13] Such large sample sizes eliminate concerns about having too few individuals in any particular group under study.

There are certain disadvantages to using these particular data when analyzing changes in earnings distributions. Probably the biggest drawback is the lack of certain types of socioeconomic information for the individuals in the dataset, particularly the lack of information regarding educational attainment. Many studies have pointed to differential educational attainment levels as a possible reason behind increases in earnings inequality over the 1970s and the 1980s. Without any way to identify the schooling level reached by the individuals in the sample, the ability to explain changes in earnings distributions using these data is limited.[14]

A second disadvantage to using these data is the work required to make them suitable for research purposes. The primary reason that the Social Security Administration collects this

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[13]The number of observations varies from year to year depending on the size of the workforce with wage and salary earnings. Also note that it is possible for the observation pool to contain different individuals from year to year because of permanent or temporary changes in employment status.

[14]The early papers in this series on earnings distributions will be limited to descriptive analyses. Future work utilizing a public use dataset linked to SSA administrative data will provide a better basis for explaining the reasons behind the changes seen in patterns of earnings inequality.

information is to assist in effectively administering the program so that the monthly benefit payments to recipients are delivered on a timely basis and in the correct amounts. Researchers within SSA, in effect, have access to these data as an afterthought and necessarily spend a great deal of time making them useful for research purposes.

Each observation in the sample, in addition to the limited demographic information, contains two earnings variables, Social Security taxable earnings and total wage and salary earnings. Social Security taxable earnings are earnings, up to the annual maximum taxable earnings amount,[15] by individuals covered by the Social Security program. The total wage and salary earnings information comes directly from an individual's W-2 form, as indicated earlier, *regardless of whether or not that individual is covered by the Social Security program.* There are observations for which the amount in the total wage and salary earnings field in the dataset is less than the amount in the Social Security taxable earnings field. This could occur if the individual in question contributed to a tax-deferred saving plan, since the earnings amount reported in the total wage and salary field in the dataset does not account for contributions to such plans.[16] It is also possible for the amount in the total wage and salary earnings field to be less than the amount given in the Social Security taxable earnings field due to the way that Social Security processes these data. For example, if a correction is made to the taxable earnings amount, it is generally the case that the corresponding total wage and salary earnings amount is

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[15]Throughout the paper I use the phrase "taxable maximum" to refer to the OASDI taxable maximum. For the years 1991-1993 of this study, the Medicare taxable maximum was higher than the OASDI taxable maximum, but the data on Medicare taxable earnings were not available in the administrative files that I used. The OASDI taxable maximum is automatically updated each year in proportion to the increase in the U.S. average wage level. See any recent *Annual Statistical Supplement to the Social Security Bulletin* for more information about the OASDI taxable maximum.

[16]The law limits the amount of wage and salary earnings that one can defer in any given year. In 1993, individuals could defer no more than $8994 of their pre-tax earnings into 401(k)-type plans, for example.

not updated to reflect the change, since, from a programmatic standpoint, the total wage and salary earnings amount is not important in the determination of benefits. Therefore, for observations where the total wage and salary earnings amount was less than the taxable earnings amount, the former was increased to the level of the latter in order to give a better accounting of the individuals' true total earnings, reflecting both the view that true total earnings should include the deferred earnings as well as the belief that the taxable earnings amounts on record are the more accurate of the two.[17, 18]

III. Measuring Earnings Inequality

Many different measures of earnings inequality have been developed over the years.[19] Perhaps the most commonly used measure, and the measure I employ in this paper, is the Gini coefficient. The traditional Gini coefficient is defined as being half of the absolute mean difference in earnings between each pair of individuals in the sample, relative to mean earnings for the

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[17]Obviously, for individuals with true total earnings above the annual maximum taxable earnings amount, this sort of adjustment will capture only part of the missing true total earnings since the Social Security taxable earnings variable does not (generally) exceed the taxable maximum in the dataset. This means that earnings are likely somewhat understated for these high earners and that the earnings inequality measures calculated, therefore, likely understate the true degree of inequality. Social Security taxable earnings are at the taxable maximum while, at the same time, total wage and salary earnings are lower than the taxable maximum, in fewer than .7% of the observations in any given year. Therefore, the degree to which the earnings measures presented later in the paper are affected should be rather small.

[18]In addition, it is likely that I do not capture any of the deferred compensation for some other individuals in the sample. For example, there are many observations where reported total wage and salary earnings amounts are greater than the taxable maximum (and therefore greater than the taxable earnings amount). There is not enough information in the dataset to determine whether these individuals had any deferred compensation. Consequently, total wage and salary earnings amounts, particularly for high earners, are probably somewhat understated.

[19]See Braun (1988) and Slottje (1989) for a detailed comparison of the various measures of income or earnings inequality.

sample.[20] In other words, it is a measure of the spread between the earnings of all pairs of individuals in the sample.

The Gini coefficient can be represented graphically with the use of a Lorenz curve, as in Figure 1. The Lorenz curve in the example is a plot of the cumulative percentage of total earnings vs. the cumulative percentage of earners, where the observations are ranked from lowest earnings to highest earnings. Point A on the Lorenz curve in Figure 1, for example, shows that the bottom 60% of the earners in the sample (bottom with respect to their position in the earnings distribution) earned approximately 25% of the total wage and salary earnings in the U.S. in 1981. The "Line of Equality" shows where the Lorenz curve would be positioned were it the case that everyone in the sample had equal earnings. Therefore, the greater the distance between the Lorenz curve and the Line of Equality, the greater the inequality present in the sample. The traditional Gini coefficient is equal to the ratio of the area between the Line of Equality and the Lorenz curve and the area beneath the Line of Equality, in other words, Area B divided by Areas B+C. As Area B gets smaller (meaning the Lorenz curve gets nearer to the Line of Equality and inequality decreases), the Gini coefficient gets smaller.

Two recent innovations regarding the Gini coefficient enhanced its usefulness for this project: work by Barrett and Pendakur (1995) regarding the asymptotic distribution of generalized Gini indices and work by Yitzhaki and Lerman (1991) on Gini decomposition. What follows is a brief overview of each of these new developments as well as an explanation of their importance.

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[20] In other words, $G = \frac{1}{2n^2\bar{y}} \sum_{i=1}^{n} \sum_{j=1}^{n} |y_i - y_j|$, where y represents earnings. See Deaton and Muellbauer (1986, pp. 232-237) for a thorough discussion of the traditional Gini coefficient.

III.1. S-Gini Indices

The traditional Gini index, though widely used, has been criticized because it does not allow inequality to be measured under different value judgements regarding the importance of one part of the earnings distribution relative to another. Partly in response to this criticism, Donaldson and Weymark (1980) and Yitzhaki (1983) independently developed what are known as the S-Gini class of inequality indices, and in particular, the S-Gini relative indices of inequality that I use in this paper. The S-Gini indices depend on a parameter, $\delta \geq 1$, that can be adjusted to reflect the sensitivity of the index to different parts of the earnings distribution.[21] For values of δ greater than 2, for example, the index places more weight on the earnings of those at the lower end of the earnings distribution. When $\delta=2$, the index places equal weight on all of the observations and corresponds to the traditional Gini coefficient.

The real value of the S-Gini indices for this paper, though, is that they are calculated by using Lorenz curve ordinates[22] and therefore use information from every part of the range of earnings. Beach and Davidson (1983), Bishop, Chakraborti, and Thistle (1989), and Bishop, Formby, and Smith (1991) developed statistical inference techniques to study income and earnings inequality by examining Lorenz curve dominance among different distributions. Barrett and Pendakur extend the previous work on S-Gini indices by deriving their large sample properties, using methods similar to those used by Bishop *et al.* for Lorenz curves, thereby making it possible

[21]Like the traditional Gini coefficient, the S-Gini has an intuitive geometric interpretation. Referring back to Figure 1, the S-Gini is twice the weighted area between the Line of Equality and the Lorenz curve, where the weights depend on the observation's rank in the earnings distribution. The S-Gini indices are constructed so that the coefficients must lie between zero and one, just as with the traditional Gini coefficient.

[22]Lorenz curve ordinates can be thought of as "points" along the curve.

for S-Ginis to be used for statistical inference.[23] With the traditional Gini coefficient, one is unable to assess whether there is a statistically significant difference between a Gini of .530 and one of .540, for example. By deriving the large sample properties of the S-Gini indices, however, Barrett and Pendakur make it possible to determine whether there is a statistically significant difference between S-Gini estimates. This is important in this paper because it allows inferences regarding the likelihood that the distribution of earnings, as measured by the S-Gini coefficient, has changed over time.

III.2. Gini Decomposition

Typically, the Theil entropy inequality measure has been used in studies such as this because it decomposes nicely into two terms that can be thought of as measures of between- and within-group inequality. However, recent work by Yitzhaki and Lerman (1991) on decomposing the Gini coefficient has breathed new life into the measure and has allowed me to use a consistent measure of inequality across all parts of this paper.

Yitzhaki and Lerman showed that the Gini index of inequality can be decomposed into three terms, one term representing between-group inequality, a second term representing the weighted sum of within-group inequality indices, and a third term representing the weighted sum

[23]Their techniques for deriving the asymptotic variance of the S-Gini estimators do not require knowledge of the underlying distribution from which the data are drawn. This is important in that the one-percent sample from the CWHS family of files is a stratified cluster probability sample, which would typically affect the sampling errors from estimation. The distribution-free property of the S-Gini indices minimizes the importance of this complication.

of group stratification indices.[24, 25] Stratification is a concept borrowed from sociology and refers to the division of a society into hierarchically arranged groupings where the members of a group have similar qualities. Yitzhaki and Lerman develop what they refer to as "indices of stratification" which capture the degree of overlap between group members and non-group members with respect to some quality, namely earnings. I use what they have defined as a relative index of stratification to examine the extent to which the earnings of certain gender and race groups overlap with the earnings of other gender and race groups.

The relative stratification index of Yitzhaki and Lerman, Q_i, ranges from -1 to 1.[26] If it is the case that Q_i=1, then no members of groups other than i have earnings within the range of earnings spanned by the members in group i, meaning group i forms a perfect stratum. As Q_i decreases from 1, group i forms less and less a stratum in the overall population as the earnings of more and more non-group i members fall within the range spanned by group i earnings. At Q_i=0, group i does not form a stratum at all since the relative rank of each person within his own group is identical to his rank in the overall population. Negative values for Q_i mean that "group" i really

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[24]Please see Yitzhaki and Lerman (1991) for a very thorough discussion of stratification and its relationship to measures of inequality, particularly its relationship to the Gini index. Their paper also contains a complete description of the derivation of the stratification indices and their properties.

[25]The decomposition works in the following way. A Gini coefficient, referred to as the within-group Gini, is calculated for each of the individual groups being studied by restricting the sample to members of that group only. Then an overall within-group inequality term is calculated by multiplying the within-group Gini coefficient for a group by the share of total earnings attributable to that group and summing these products across all groups. Next a stratification index is calculated for each of the groups in question using the methods set forth by Yitzhaki and Lerman in their paper. An overall stratification term is computed by summing the products of the stratification index for each group, the share of total earnings attributable to that group, the within-group Gini for that group, and one minus the proportion of the sample in the group. Finally, a between-group inequality term is derived for the sample using techniques found in the Yitzhaki and Lerman paper. The overall Gini coefficient is given by the sum of the overall within-group inequality term, the overall stratification term, and the between-group inequality term. Since there is some overlap between the stratification term and the overall within-group inequality and the between-group inequality terms, in the discussion that follows I will point out where this overlap matters.

[26]Yitzhaki and Lerman (1991), p. 318.

is not a single group, but is instead composed of several different groups. Finally, were Q_i=-1 to be true, "group" *i* would actually consist of two distinct groups, with those groups located at opposite ends of the earnings distribution. In this case, the earnings of everyone in the sample *other* than those in group *i* would lie between the ranges of the two segments of group *i* earnings, meaning that group *i* would form two perfect, distinct strata.

While tests for the statistical significance of year-to-year differences in the stratification index, or in the between-group inequality term, have yet to be developed, I am able to take advantage of the S-Gini to test for the statistical significance of year-to-year differences in the within-group Ginis. To do so, I calculated S-Gini coefficients (δ=2) for each of the years of the sample, restricting the sample to only those observations containing members of the group in question. The results of these within-group S-Gini calculations are mentioned, where appropriate, in the section that follows.

IV. Empirical Results

Table 1 shows the sample means, medians, and S-Gini coefficients for total wage and salary earnings for the entire sample. The S-Gini coefficients (the last column in the table) and the asymptotic standard errors were calculated on the basis of 100 sample quantiles. The decision to use 100 quantiles for calculating the S-Ginis was somewhat arbitrary, though the S-Ginis presented in Table 1 for the case of δ=2 (the "traditional" Gini coefficient where all observations are equally weighted) are identical to those calculated via the covariance method of Lerman and Yitzhaki (1984) to at least three decimal places.[27, 28]

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[27]Barrett and Pendakur (1995) use 20 quantiles in their paper. The sensitivity tests they performed indicated that increasing the number of quantiles to 100 did not significantly improve the accuracy of their S-

Table 1 demonstrates clearly that real wage and salary earnings grew very slowly over the period of the study.[29] In fact, while mean real earnings for those in the sample grew at slightly more than a 2% rate for the first 6 years of the sample, they generally declined (in real dollar terms) over the final 6 years.[30] In part this reflects the slow growth in the per hour wage rate that occurred over the period in question. Since the sample includes both full-time and part-time/part-year workers, the real earnings stagnation shown might also be evidence of a movement away from full-time towards part-time employment. This pattern of real wages and salaries peaking in 1987 for this sample is also evident when one examines median real earnings as shown by "Median Earnings" column of Table 1.

The last column of Table 1 lists the S-Ginis (and asymptotic standard error terms) for the case when $\delta=2$. The first point that should be noted is that, given the year-to-year fluctuation in the S-Gini estimates shown in Table 1, the choice of years of comparison matters when evaluating trends in earnings inequality. If one were to compare the S-Gini from 1986 (.510) with that from 1992 (.512), one reaches a very different conclusion about recent trends in earnings inequality than if one were to compare the S-Ginis from 1987 (.519) and 1992. Past studies that focused on

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Ginis. Tests I conducted on my sample showed significant improvement in the accuracy of the estimated S-Gini with an increase of quantiles used from 20 to 100, but little or no gain from increasing the number of quantiles beyond 100. In order to reduce the computational burden, I chose to use 100 quantiles for this paper.

[28]As I indicated in the previous section, the S-Gini indices are "ethically tunable" in that one can adjust the δ parameter to place more weight on the part of the earnings distribution with which one is most concerned. Since the techniques developed by Yitzhaki and Lerman are designed to decompose the traditional Gini coefficient, I chose to use $\delta=2$, which corresponds to the traditional Gini coefficient, in my S-Gini calculations for consistency across the measures presented in the paper.

[29]I used the Total Personal Consumption Expenditures deflator to adjust earnings for changes in the price level over time. All earnings are given in terms of 1992 dollars.

[30]There was a rather dramatic upward "blip" in the real mean earnings in 1992 that was not present in the real median earnings of that year. It is unclear if this blip represents reality or if it is an artifact of the timing of the collection and compilation of the earnings information by SSA.

examining two or three disparate years in order to determine overall trends in earnings (or income) inequality may instead simply be picking up short-term fluctuations.

As seen in the "S-Gini" column of Table 1, earnings inequality in this sample generally increased from 1981 through 1988, at which point the trend appears to have slowed or reversed, with the S-Ginis decreasing from 1988 through 1992.[31] Table 2 demonstrates this phenomenon very clearly. The column labeled "1986," for example, shows that the S-Gini coefficients for all years subsequent to 1986 (reading down the "1986" column) are larger than that of 1986 by statistically significant amounts. This is also true for most of the year-to-year pairings including years prior to 1986, as shown by the columns labeled "1981-1985." From the column labeled "1987" on, however, the opposite is true (with the exception of comparisons with the S-Gini for 1993) in general. While this sample provides evidence of a possible trend reversal in earnings inequality, the short duration of the observed reversal, as well as the large upward jump in the S-Gini coefficient from 1992 to 1993, mean that several more years of data beyond 1993 are needed to confirm (or deny) that the upward trend in earnings inequality, present since the mid-1970s, has changed.

Table 3 shows the share of total wage and salary earnings for each decile of the earnings distribution for each year, highlighting the fact that what appear to be small numerical differences in S-Gini coefficients can represent rather substantial differences in the distribution of earnings. Several patterns are clear in Table 3. The earnings share of the uppermost decile increased by about 17% over the period 1981-93, while earnings shares of all nine other deciles declined by

[31]It is not clear whether the rather large upward jump in the 1993 S-Gini coefficient represents another reversal in the trend of earnings inequality or is simply a short-term interruption of the downward trend observed in the four previous years.

amounts ranging from -24% to -6% over the same period.[32] The patterns present in the earnings shares in Table 3 also help to explain the trends seen in the S-Gini coefficients in Table 1. The earnings share increased for the upper decile over 1981-1988, while the shares generally fell for the other deciles, corresponding to the increasing S-Gini coefficients over that period found in Table 1. From 1988 to 1992, the earnings share for those in the upper decile remained relatively steady, while shares for those in the lowest five deciles mostly increased, explaining the decreasing S-Gini coefficients over that period. From 1992 to 1993, earnings shares for the lower six deciles showed generally large (in percentage terms) decreases, while shares for the upper four deciles showed increasingly large gains as one moves upwards along the earnings distribution, a fact again reflected in the large increase in the S-Gini coefficient from 1992 to 1993 in Table 1.

The next table, Table 4, shows the decomposition of the overall annual Ginis by gender for total wage earnings. The "Mean Earnings" columns in Table 4 show that mean real earnings of females for this sample in 1981 were about 50% of mean male earnings that year, a number which had climbed to nearly 60% by 1993.[33] Also, it should be noted that mean female earnings continued to increase, for the most part, throughout the period, while mean male earnings peaked in 1988 and began a general decline thereafter. The increase in relative average mean female earnings, along with the increasing proportion of females in the sample due to increased female

[32]Future work will examine more closely the rather large increases in earnings share garnered by the upper decile of the earnings distribution.

[33]These percentages seem low until one considers that the sample contains part-year and part-time workers and that females likely form a disproportionate part of those groups.

labor force participation, lead to an increase in the part of total earnings going to women over the period in question, as shown by the last column in the top of Table 4.[34]

The columns in Table 4 labeled "Within-group Ginis" reveal an interesting mystery. While the gap between male and female within-group Gini coefficients narrowed from 1982 through 1985, from 1986 through 1993 this gap increased significantly.[35] It is not clear why male earnings inequality increased at a faster rate, on average, than did female earnings inequality, especially given that mean female earnings generally increased at a faster rate than did mean male earnings over the period.[36] The growing disparity in mean male earnings could be explained by a growing relative return to college education compounded by the increasing use of computers in the workplace, for example.[37] This does not explain why male earnings inequality would be growing more quickly than female earnings inequality, however, since one might expect relative return to college education differentials for females to be growing similarly to those for males. Females increasingly moving from part-time to full-time employment might explain the pattern seen in

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[34]Similar earnings share calculations were carried out using Social Security taxable earnings. The female shares of earnings in every year in this restricted sample are substantially higher than those given in Table 4, indicating that the earnings of high-earning males were differentially capped at the taxable maximum. In 1993, for example, 84% of those with total wage and salary earnings greater than the taxable maximum ($57,600) were male. The mean real earnings for those males with earnings greater than the taxable maximum in 1993 were about $111,090, while the mean real earnings for females with earnings greater than the taxable maximum in 1993 were slightly greater than $88,500.

[35]I also calculated S-Gini coefficients (δ=2) separately for males and for females. In general, any difference of .003 or more for any year-to-year, male, within-group Gini pairing is statistically significant at the .05 level (or better). A difference of .002 or more is statistically significant at the .05 level (or better) for any year-to-year, female, within-group Gini pairing.

[36]It has generally been the case in the past that earnings inequality grew during periods of rapid earnings growth. See Levy and Murnane (1992).

[37]Many have proposed explanations for the increasing male earnings inequality for the period of the late 1970s through the mid-1980s. See Levy and Murnane (1992), Dooley and Gottschalk (1984), and Blackburn (1990) for additional information. There appears to be far less research examining female within-group earnings inequality.

Table 4, but these data do not provide sufficient detail to determine whether or not such is the case.

The columns in Table 4 labeled "Stratification Index" reveal that females in the sample are somewhat stratified in the sense that they occupy a distinct segment of the earnings distribution relative to males. Approximately 64% of the females in the sample in 1981 had earnings lower than the median earnings for the entire sample, with this higher concentration of female earnings towards the lower end of the earnings distribution leading to the higher relative stratification number. Note that by 1993, females were much less stratified, with the percentage having earnings below the median falling to around 58%.

Male/female between-group inequality fell rather dramatically over the period 1981-93. The "Between-group Inequality" column of Table 4 shows that, by this measure, between-group inequality decreased by approximately 50% from 1981 to 1993.[38] This result should not be surprising given the substantial increase in the female share of total wage and salary earnings and the declining stratification of females over the period being examined.

Table 5 shows the decomposition of the overall annual Ginis by race for total wage and salary earnings. I used three racial/ethnic groups, White, Black, and Other, because of limitations in the data in this regard. The Social Security Administration race codes are different from those typically found in survey datasets in that race is self-selected by the applicant when he or she applies for a Social Security card. In addition, in 1980 the race options changed on the form that one uses to apply for a Social Security card. Prior to 1980, applicants had three choices, White,

[38]It is not correct to simply divide a coefficient in the "Between-group Inequality" column for a particular year by the coefficient in the "Overall Gini" column for the corresponding year to arrive at a percentage of inequality attributable to between-group inequality. There are components of between-group (as well as within-group) inequality present in the coefficients of the stratification term which would not be properly accounted for by doing this.

Black, or Other. After 1980, the choices became White (not Hispanic), Black (not Hispanic), Other, Asian/Pacific Islander, Hispanic, North American Indian or Eskimo, or Unknown.[39] I chose to place any individual other than one whose race is given as White or Black in the administrative data into the "Other" category. To the extent that the pre-1980 Hispanic applicants for Social Security cards classified themselves as White and post-1980 Hispanic applicants identified themselves as Hispanic, my Other group becomes increasingly young and increasingly Hispanic, while my White group becomes increasingly less Hispanic over the period of the study due to the classification change alone.[40]

The "Mean Earnings" columns in Table 5 show the disparity in real earnings between the races. The mean real earnings of Blacks lag far behind those in both the White and the Other categories, and, in fact, declined relative to mean White real earnings (from about 72% of White earnings in 1981 to about 69% in 1993), although it certainly was not a steady year-to-year decline. Those who reported themselves as neither White nor Black also saw their real earnings decline relative to White real earnings, from about 88% of White earnings in 1981 to about 84% in 1993.[41] Aside from 1992, Whites saw their real mean earnings peak in 1988, while the corresponding secondary peak in real mean earnings occurred in 1991 for Blacks and in 1987 for Others.

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[39]To further complicate matters, individuals are increasingly declining to identify their race when applying for Social Security cards. In addition, the state programs that register newborns for SSNs typically do not provide race/ethnicity information to SSA. The upshot is that, over time, the race data in Social Security's administrative records will likely become less and less useful as a way of grouping individuals.

[40]Future work will attempt to determine the extent to which the race classification change affects the results presented here.

[41]As with the ratio of Black to White mean earnings, the ratio of Other to White earnings did not show a steady year-to-year decline.

Those in the Others category increased their share of total earnings, shown in the last column in the top part of Table 5, despite experiencing a overall decrease in relative mean earnings, because the proportion of those who identified themselves as being other than White or Black in the sample increased dramatically over time.[42] The proportion of Blacks in the sample, and their share of total wage and salary earnings, remained fairly constant over the period. Since the proportion of Whites in the sample fell at a fast rate over the period, their share of total earnings fell even though their relative mean earnings increased.

The "Within-group Ginis" section in the bottom of Table 5 shows that the largest earnings disparity occurs within the Others group, which has within-group Ginis far higher than either of the other two groups in every year of the sample. It should be noted that the Gini coefficients for all three groups demonstrate a generally increasing, then stable or decreasing, trend in earnings inequality, again with the exception that the Ginis for all three within-group categories jump upward in 1993.[43]

The stratification indices for the three race groups show little sign that any of the groups are stratified relative to the others. There appears to be considerable overlap among the groups' earnings distributions despite the large differences in group mean earnings. It does appear that Blacks as a group are becoming less stratified with regard to earnings, and that Whites are becoming more stratified, but the levels of both sets of indices are very low, so trends one way or

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[42]In part this might be due to the problems discussed earlier with regard to grouping by race using SSA data. It also is due, in part, to an increase in those identifying themselves as being of Asian or of Pacific Island origin.

[43]I calculated within-group S-Gini coefficients (δ=2) for the three race groups to determine the statistical significance of the year-to-year pairings within each group. In general, a difference of .002 or greater in any year-to-year pairing is needed for statistical significance at the .05 level for the White group, a difference of .003 or greater is needed for statistical significance at the .05 level for the Black group, and a difference of .005 or greater is needed for statistical significance at the .05 level for the Other group.

the other may have very little real-world significance. Racial differences with regard to stratification do appear to some extent when I examine the effect of both gender and race on earnings inequality later in the paper.[44]

The final part of Table 5 shows that within-group inequality is by far the most important contributor to overall earnings inequality when racial/ethnic differences are considered. The between-group measure of earnings inequality contributes very little to overall earnings inequality for this sample. While there are obviously differences between the races with respect to earnings, it is the earnings inequality within the different races which overwhelmingly dominates the composition of the earnings inequality measures used here.

Table 6 results from dividing the sample into race/gender subgroups. Some interesting patterns emerge from the "Mean Earnings" columns in the top part of Table 6. The real mean earnings of males in all three race groups increased more slowly over the sample period than did the real mean earnings of any of the three female race groups. Real mean earnings for each of the male subgroups follow a pattern of generally increasing to some peak partway through the period covered by the sample and decreasing, for the most part, beyond that point, while for all of the female subgroups mean real earnings generally increased throughout. White females showed the largest percentage increase in mean real earnings over the period (26%), with black females (19%), other females (15%), white males (10%), other males (6%), and black males (0.3%) trailing. It is interesting that black females showed the second largest gain in mean real earnings from 1981-93, while the mean real earnings of black males barely increased at all. Figures 2 and 3 provide a graphical representation of the mean and median real earnings, respectively, for the six

[44]Yitzhaki and Lerman (1991) also find that stratification does not appear when looking at racial subgroups but does become a factor when the sample is further subdivided into race/head of household subgroups.

race/gender groups. Figure 3 shows that median real earnings for all three groups of males declined over the period 1981-93, while the median real earnings for the three groups of females increased over that same time frame, though the increases for those females in the black or other categories were relatively small. The fact that the mean real earnings for the three groups of males increased (or remained roughly constant in the case of the black males), while the median real earnings decreased, implies that the distribution became more concentrated toward the low end, but with a disproportionate increase in the earnings of those at the upper end--perhaps a demonstration of the "disappearing middle class" that is the subject of much speculation.

Table 6 reaffirms several interesting facts about the changing composition of the labor force in the U.S. economy. Over the period 1981-93, the proportion of white males in the sample declined, the only group to experience this phenomenon. Nearly all of this decline can be accounted for by the large influx of those in the other male and other female categories, who saw their sample proportions increase by about 82% and 96%, respectively.[45] Over the early to mid-1980s, the proportion of white females in the sample increased somewhat, but, after peaking in 1986, it decreased to the point where, by 1993, it nearly matched what it had been in 1981. The proportion of black females in the sample generally increased through 1988 or 1989, then remained relatively flat for the rest of the period under investigation. The proportion of black males in the sample remained relatively steady over the entire period. Black males in 1993 formed a smaller part of the sample than four of the other groups and, if the trends shown in Table 6 continue, will form the smallest proportion of the work force (given these groupings) in the not-too-distant future.

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[45]Again, part of this increase can likely be attributed to the change that occurred in 1980 in the way that race is reported in Social Security administrative records.

Given the previous discussions of mean real earnings and of the proportion of the sample attributed to the groups, the "Earnings Share" numbers in Table 6 are as expected. White males and black males experienced substantial declines in their shares of total earnings, whereas the other four groups saw increases in their shares. Those in the other male and other female categories doubled (females) or nearly doubled (males) their share of total earnings, while black females and white females increased their shares of total earnings by 25% and 15%, respectively. Despite these trends in earnings shares over the 1980s and early 1990s, it is still the case that white males received more than 50% of the total earnings in 1993 even though they comprised only about 41% of the wage and salary workers that year in the sample.[46]

Both white females and black females formed somewhat stratified groups in 1981, as indicated in the section of Table 6 labeled "Stratification Index." By 1993, the degree to which they were stratified had greatly diminished. Interestingly, the distribution of earnings for individuals in the other female group seems to overlap with those of the other five groups to a larger extent than do the distributions of earnings for white females and black females. It is likely that the earnings distributions for females for 1981, for example, are conceptually similar to those shown in Figure 4.[47] While enough of the white female and black female distributions do not

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[46]White males differentially benefit from not having earnings taxed because of the taxable maximum, as evidenced by a substantial drop in white male earnings share in every year when these same calculations are performed using Social Security taxable earnings. About 9% of the white males in the sample had earnings greater than the taxable maximum in 1993, for example. Of those in the category other males, slightly more than 6% had earnings greater than the taxable maximum. In each of the other groups, fewer than 2.2% of the individuals earned more than the taxable maximum in 1993. Of the approximately 5% of the sample with earnings greater than the taxable maximum in 1993, almost 74% were white males. For those individuals with earnings greater than the taxable maximum in 1993, mean real earnings by group were: white males, $110,879; white females, $88,635; black males, $90,842; black females, $86,500; other males, $119,273; other females, $89,151.

[47]The actual distributions for the three groups presented in Figure 4 overlap to a greater extent than do the representative distributions presented. The representative distributions have the differences between the distributions accentuated for clarity of exposition.

overlap to leave each somewhat in its own stratum, the earnings distribution for those in the other female category overlaps both the white female and black female distributions sufficiently so that those in the other female category do not occupy their own segment of the overall earnings distribution. For the most part, none of the male groups are sole occupants of a segment of the earnings distribution. While the stratification coefficients for white males did trend upward through the early 1980s before decreasing over the late 1980s and early 1990s, the coefficients themselves are close to zero, meaning stratification really is not much of an issue for the group.

Within-group earnings disparity increased for all six groups, as indicated by the within-group Gini coefficients at the bottom of Table 6.[48] By this measure, the earnings distributions of those in the other male category are the most unequal of the six groups' distributions in all years but 1981, followed somewhat distantly by the distributions for those in the other female category. The annual Ginis for all of the groups exhibit, to varying degrees, the trend pattern present in the overall Ginis of generally increasing inequality during the early years of the sample followed by mostly stable or decreasing inequality during the later years.[49] White females and black females, though they made the largest percentage gains in real mean earnings, had the smallest increases in within-group earnings inequality over the period, deviating from the traditional pattern of quickly rising earnings being accompanied by increasing earnings inequality.[50] This might indicate that a

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[48]S-Gini coefficients (δ=2) calculated for each of the six groups show that for differences in the year-to-year pairings within a group to be statistically significant, it generally is the case that the differences must be at least: .003 for white males; .003 for black males; .007 for other males; .002 for white females; .004 for black females; and .006 for other females.

[49]As is the case elsewhere in the paper, the Gini coefficients for 1993 show a distinct upward jump which is contrary to the coefficient patterns observed in the previous couple of years for most of the groups.

[50]There is one small mystery--the within-group Gini coefficients for black females, when the earnings used in the calculations are Social Security taxable earnings, are higher than the within-group Ginis in Table 6 in many of the years. One would expect the Gini coefficients to be smaller when using taxable earnings in the calculations because of the decreased range of possible earnings. Indeed, the Gini coefficients are smaller for all groups other

portion of those in both groups who were low-earnings workers at one time saw improvements in their situations, moving them upwards in the earnings distribution, at least relative to the distributions for the other groups.

It should also be noted, with regard to Table 6, that between-group inequality fell over the period, as shown by the 34% decrease in the between-group Ginis from 1981 to 1993. It is likely that much of this decrease in between-group inequality is actually driven by the decrease in gender inequality evident in Table 4. Each of the female groups made significant earnings gains relative to their male group counterparts over the period. As the Gini coefficients in the "Within-group Inequality" columns emphasize, within-group inequality is overwhelmingly what drives overall earnings inequality in this sample.

V. Conclusion

A thorough understanding of earnings provides valuable insights into the economic well-being of individuals and groups within society. A detailed knowledge of earnings and changes in patterns of earnings is also necessary in order to accurately forecast the financial future of the Social Security program, either under current law or under various plans to reform the program.

This paper uses Social Security Administration data to examine changing earnings distributions in the U.S. over the 1980s and early 1990s. These unique data provide several advantages over data typically used in studies of this sort. Because the earnings information comes directly from the W-2 forms filed by employers, these data minimize the problem of self-

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than black females. Although I have not yet investigated this, I suspect that a significant number of black females with earnings in the middle of the distribution are with employers, such as many state or local governments, where they are not required to pay OASDI taxes. Eliminating their earnings when considering only those with OASDI taxable earnings could cause the observed Gini behavior.

reporting errors which are often present in survey data. In addition, because of the large number of observations contained within the dataset, I am able to provide better tests of the statistical significance of year-to-year fluctuations in earnings inequality, even when the data are segmented into gender, race, and gender/race groups.

One result to come out of this work is an indication that the upward trend in earnings inequality, observed since the early 1970s, might have slowed or reversed during the latter part of the 1980s and early 1990s. With the exception of the 1993 S-Gini coefficient, statistically significant year-to-year decreases are present in the annual S-Gini coefficients for this sample from 1988. Similarly, the "earnings share by decile" patterns present in Table 3 point to decreasing or steady earnings inequality over the late 1980s and early 1990s. My findings confirm the results of Blackburn, Bloom and Freeman (1990/1991), Karoly (1992), and others regarding increasing earnings inequality over the early to mid-1980s, but there has been little or no evidence, prior to this paper, to suggest that the trend in earnings inequality might have changed in the late 1980s. While clearly the observed period of generally decreasing Ginis is not long enough to declare that the overall trend of increasing earnings inequality has slowed or reversed, this work demonstrates the need for further testing with more recent earnings data.

I find that earnings inequality for males, and in particular for white males, seems to have increased, for the most part, throughout the period of the study. This corroborates what Katz and Murphy (1992), Burtless (1990), Dooley and Gottschalk (1984), and many others have found. While most of the other articles study periods ending in the mid- to late 1980s, I find this trend of increasing male earnings inequality continues into the early 1990s.

Another idea to emerge from this paper is that between-group inequality, whether between genders or between race/gender groups, declined significantly over the period 1981-93. The

between-group inequality terms presented in the tables, while often quite small, declined over the period. Nearly all of the earnings inequality present in the U.S. can be attributed to within-group inequality, at least when one uses the measures used here. This is not to say that large differences do not exist between genders and/or races with regards to earnings, but rather that these between-group differences are swamped by the differences within the groups themselves. The stratification indices presented also point to the idea of decreased inequality between groups in that those groups which showed substantial stratification in 1981 were much less their own strata in society by 1993.

This paper provides yet another demonstration of the plight of the black male in the U.S., at least with regard to earnings. By nearly every measure, the earnings of black males declined relative to those of other groups, which accords with the findings of Juhn, Murphy, and Pierce (1991) and Bound and Freeman (1992), among others. While the mean and median earnings of black females showed the second largest percentage increases of any group identified in the sample, those of black males were stagnant or declined from 1981 to 1993.

Female earnings continued to improve relative to male earnings over the period of the study, which agrees with the findings of many other authors. This improvement in female earnings relative to the earnings of males transcends racial boundaries, although the rate of growth in mean earnings over the period does vary from white females to black females to those in the other female category. The fact that within-group earnings inequality for females appears to be growing more slowly, in general, than within-group earnings inequality for males still requires an explanation.

Future work will examine the impacts of age and cohort differences on earnings distributions in the U.S. I also plan to examine more thoroughly the changes that have taken

place in the upper part of the earnings distribution. In addition, SSA will soon be able to match administrative information on total wage and salary earnings to public-use survey files, such as the Survey of Income and Program Participation and the Current Population Survey. Such matches will provide information on educational attainment and household characteristics, thereby improving the explanatory power of the future analyses.

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Table 1

Estimated Relative S-Gini Coefficients for the Entire Sample--Total Wage Earnings

(asymptotic standard errors in parentheses beneath the S-Gini coefficients)[1]

Year	Number of Observations	Mean Earnings (1992 dollars)	Median Earnings (1992 dollars)	S-Ginis ($\delta = 2.0$)
1981	1,027,250	$19,279	$14,845	.489 (0.00032)
1982	982,510	$19,950	$14,886	.506 (0.00051)
1983	1,102,398	$20,376	$15,262	.504 (0.00054)
1984	1,134,793	$20,748	$15,360	.509 (0.00071)
1985	1,183,722	$21,109	$15,710	.505 (0.00049)
1986	1,174,228	$21,256	$15,731	.510 (0.00053)
1987	1,215,226	$21,834	$15,890	.519 (0.00085)
1988	1,255,003	$21,807	$15,756	.522 (0.00079)
1989	1,282,915	$21,581	$15,713	.517 (0.00065)
1990	1,294,074	$21,475	$15,636	.516 (0.00062)
1991	1,286,127	$21,340	$15,496	.515 (0.00069)
1992	1,259,403	$22,203	$15,470	.512 (0.00076)
1993	1,306,253	$21,376	$15,205	.527 (0.00072)

[1]One can perform one-tailed or two-tailed standard normal z-tests of the statistical significance of the difference between any two of the S-Gini coefficients given above by calculating the following statistic, $z = \frac{G_1 - G_2}{\sqrt{SE_1^2 + SE_2^2}}$, where the G's are the S-Gini coefficients and the SE's are the standard errors.

Table 2

Year-to-Year S-Gini Statistical Significance Patterns, Total Wage Earnings

(δ=2)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1981	=												
1982	++	=											
1983	++	-	=										
1984	++	++	++	=									
1985	++	=	=	--	=								
1986	++	++	++	=	++	=							
1987	++	++	++	++	++	++	=						
1988	++	++	++	++	++	++	+	=					
1989	++	++	++	++	++	++	-	--	=				
1990	++	++	++	++	++	++	--	--	=	=			
1991	++	++	++	++	++	++	--	--	-	=	=		
1992	++	++	++	++	++	++	--	--	--	--	--	=	
1993	++	++	++	++	++	++	++	++	++	++	++	++	=

++ The "row" year Gini is greater than the "column" year Gini at the .01 significance level.
+ The "row" year Gini is greater than the "column" year Gini at the .05 significance level.
= The difference between the years is not statistically significant at the .05 significance level.
- The "row" year Gini is less than the "column" year Gini at the .05 significance level.
-- The "row" year Gini is less than the "column" year Gini at the .01 significance level.

Table 3

Earnings Share by Decile

decile	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.34%	0.31%	0.30%	0.29%	0.31%	0.29%	0.29%	0.29%	0.29%	0.30%	0.30%	0.34%	0.26%
2	1.37%	1.28%	1.25%	1.22%	1.28%	1.22%	1.20%	1.21%	1.23%	1.27%	1.29%	1.41%	1.17%
3	2.81%	2.67%	2.65%	2.61%	2.70%	2.62%	2.56%	2.57%	2.62%	2.67%	2.70%	2.84%	2.55%
4	4.67%	4.47%	4.47%	4.40%	4.48%	4.39%	4.29%	4.28%	4.34%	4.38%	4.39%	4.49%	4.23%
5	6.69%	6.45%	6.46%	6.37%	6.42%	6.36%	6.25%	6.20%	6.25%	6.27%	6.25%	6.28%	6.10%
6	8.81%	8.52%	8.58%	8.49%	8.52%	8.48%	8.32%	8.26%	8.31%	8.30%	8.28%	8.23%	8.14%
7	11.26%	10.89%	10.98%	10.91%	10.92%	10.88%	10.66%	10.58%	10.63%	10.60%	10.59%	10.45%	10.46%
8	14.38%	13.91%	14.03%	13.97%	13.95%	13.89%	13.60%	13.50%	13.57%	13.53%	13.53%	13.31%	13.41%
9	18.80%	18.23%	18.27%	18.27%	18.18%	18.13%	17.73%	17.64%	17.75%	17.69%	17.74%	17.42%	17.71%
10	30.86%	33.29%	33.00%	33.46%	33.24%	33.73%	35.10%	35.46%	35.01%	35.00%	34.92%	35.23%	35.97%

Table 4

Earnings Distributions by Gender--Total Wage Earnings

	Mean Earnings (1992 dollars)		Proportion of Sample		Earnings Share	
	male	female	male	female	male	female
1981	$24,539	$12,621	0.559	0.441	0.711	0.289
1982	$25,392	$12,982	0.561	0.439	0.715	0.285
1983	$25,855	$13,657	0.551	0.449	0.699	0.301
1984	$26,483	$13,850	0.547	0.453	0.697	0.303
1985	$26,905	$14,251	0.542	0.458	0.691	0.309
1986	$27,033	$14,545	0.537	0.463	0.683	0.317
1987	$27,701	$15,070	0.536	0.464	0.679	0.321
1988	$27,754	$15,013	0.533	0.467	0.679	0.321
1989	$27,232	$15,141	0.533	0.467	0.672	0.328
1990	$26,981	$15,246	0.531	0.469	0.667	0.333
1991	$26,512	$15,520	0.529	0.471	0.658	0.342
1992	$27,613	$16,161	0.528	0.472	0.656	0.344
1993	$26,495	$15,694	0.526	0.474	0.652	0.348

	Within-group Ginis		Stratification Index		Overall Gini	Between-group Inequality Term	Within-group Inequality Term	Stratification Term
	male	female	male	female				
1981	0.456	0.464	0.043	0.231	0.489	0.054	0.458	-0.024
1982	0.485	0.466	0.053	0.212	0.506	0.051	0.480	-0.025
1983	0.486	0.467	0.041	0.202	0.504	0.047	0.480	-0.022
1984	0.489	0.473	0.055	0.189	0.509	0.048	0.484	-0.024
1985	0.486	0.471	0.056	0.181	0.505	0.047	0.482	-0.023
1986	0.494	0.474	0.052	0.170	0.510	0.044	0.488	-0.022
1987	0.507	0.483	0.059	0.145	0.519	0.042	0.499	-0.022
1988	0.530	0.478	0.058	0.146	0.522	0.040	0.513	-0.032
1989	0.511	0.477	0.054	0.136	0.517	0.038	0.500	-0.020
1990	0.511	0.477	0.055	0.124	0.516	0.036	0.500	-0.019
1991	0.514	0.477	0.042	0.114	0.515	0.031	0.501	-0.017
1992	0.513	0.471	0.053	0.104	0.512	0.031	0.499	-0.017
1993	0.528	0.488	0.037	0.103	0.527	0.028	0.514	-0.015

Table 5

Earnings Distributions by Race--Total Wage Earnings

	Mean Earnings (1992 dollars)			Proportion of Sample			Earnings Share		
	white	black	other	white	black	other	white	black	other
1981	$20,028	$14,486	$17,621	0.832	0.110	0.058	0.864	0.083	0.053
1982	$20,766	$14,532	$18,437	0.832	0.109	0.059	0.866	0.079	0.054
1983	$21,187	$15,273	$18,799	0.826	0.111	0.063	0.859	0.083	0.058
1984	$21,646	$15,325	$18,970	0.821	0.113	0.066	0.856	0.083	0.061
1985	$22,028	$15,576	$19,419	0.816	0.114	0.069	0.852	0.084	0.064
1986	$22,190	$15,537	$19,814	0.814	0.115	0.072	0.849	0.084	0.067
1987	$22,881	$15,644	$20,230	0.806	0.116	0.078	0.845	0.083	0.072
1988	$22,991	$15,567	$19,358	0.796	0.117	0.087	0.839	0.083	0.077
1989	$22,782	$15,467	$19,056	0.790	0.116	0.094	0.834	0.083	0.083
1990	$22,659	$15,491	$19,064	0.786	0.116	0.098	0.829	0.084	0.087
1991	$22,456	$15,692	$19,055	0.785	0.114	0.101	0.826	0.084	0.090
1992	$23,293	$16,338	$20,317	0.786	0.113	0.101	0.824	0.084	0.092
1993	$22,577	$15,475	$19,026	0.776	0.115	0.109	0.820	0.083	0.097

	Within-group Ginis			Stratification Index			Overall Gini	Between-group Inequality Term	Within-group Inequality Term	Stratification Term
	white	black	other	white	black	other				
1981	0.486	0.474	0.502	-0.001	0.073	-0.013	0.489	0.007	0.486	-0.005
1982	0.505	0.474	0.522	0.009	0.076	-0.024	0.506	0.008	0.503	-0.006
1983	0.503	0.478	0.526	0.016	0.058	-0.029	0.504	0.007	0.502	-0.005
1984	0.507	0.484	0.531	0.022	0.056	-0.031	0.509	0.008	0.506	-0.005
1985	0.503	0.484	0.533	0.025	0.053	-0.035	0.505	0.008	0.503	-0.005
1986	0.507	0.488	0.540	0.028	0.053	-0.037	0.510	0.008	0.507	-0.006
1987	0.516	0.490	0.559	0.037	0.050	-0.044	0.519	0.009	0.517	-0.006
1988	0.517	0.491	0.562	0.043	0.048	-0.045	0.522	0.009	0.519	-0.006
1989	0.512	0.491	0.554	0.042	0.043	-0.035	0.517	0.010	0.514	-0.006
1990	0.511	0.488	0.551	0.040	0.043	-0.035	0.516	0.009	0.513	-0.006
1991	0.511	0.490	0.551	0.039	0.036	-0.035	0.515	0.008	0.512	-0.006
1992	0.509	0.483	0.540	0.035	0.032	-0.026	0.512	0.008	0.510	-0.006
1993	0.521	0.506	0.565	0.047	0.028	-0.037	0.527	0.009	0.524	-0.006

Table 6

Earnings Distributions by Race and Gender--Total Wage Earnings

Mean Earnings (1992 dollars)

	white male	black male	other male	white female	black female	other female
1981	$25,768	$16,627	$21,215	$12,702	$12,073	$12,562
1982	$26,735	$16,427	$22,165	$13,060	$12,390	$13,056
1983	$27,208	$17,116	$22,636	$13,721	$13,290	$13,494
1984	$27,966	$17,261	$23,018	$13,961	$13,278	$13,502
1985	$28,428	$17,519	$23,648	$14,391	$13,551	$13,818
1986	$28,578	$17,385	$24,154	$14,713	$13,640	$14,160
1987	$29,387	$17,353	$24,859	$15,326	$13,909	$14,219
1988	$29,702	$17,320	$23,358	$15,302	$13,814	$14,012
1989	$29,224	$17,037	$22,676	$15,447	$13,915	$14,096
1990	$28,959	$16,926	$22,606	$15,545	$14,083	$14,226
1991	$28,384	$16,962	$22,381	$15,800	$14,466	$14,532
1992	$29,486	$17,691	$23,716	$16,390	$15,054	$15,674
1993	$28,451	$16,679	$22,444	$16,063	$14,337	$14,494

Proportion of Sample

	white male	black male	other male	white female	black female	other female
1981	0.467	0.058	0.034	0.366	0.052	0.024
1982	0.469	0.058	0.035	0.363	0.051	0.024
1983	0.457	0.057	0.037	0.369	0.053	0.026
1984	0.450	0.058	0.038	0.370	0.055	0.028
1985	0.444	0.058	0.040	0.372	0.056	0.030
1986	0.439	0.058	0.040	0.375	0.057	0.031
1987	0.433	0.059	0.044	0.373	0.058	0.034
1988	0.425	0.058	0.050	0.371	0.058	0.037
1989	0.420	0.058	0.054	0.369	0.059	0.040
1990	0.417	0.057	0.056	0.369	0.059	0.041
1991	0.415	0.056	0.058	0.370	0.058	0.043
1992	0.414	0.055	0.058	0.371	0.058	0.043
1993	0.408	0.056	0.062	0.368	0.059	0.047

Earnings Share

	white male	black male	other male	white female	black female	other female
1981	0.624	0.050	0.037	0.241	0.032	0.016
1982	0.629	0.048	0.039	0.238	0.032	0.016
1983	0.611	0.048	0.041	0.248	0.035	0.018
1984	0.607	0.048	0.042	0.249	0.035	0.018
1985	0.598	0.048	0.044	0.254	0.036	0.020
1986	0.590	0.048	0.046	0.259	0.036	0.021
1987	0.583	0.047	0.050	0.262	0.037	0.022
1988	0.579	0.046	0.053	0.260	0.037	0.024
1989	0.569	0.046	0.057	0.264	0.038	0.026
1990	0.562	0.045	0.059	0.267	0.038	0.027
1991	0.552	0.045	0.061	0.274	0.039	0.029
1992	0.550	0.044	0.062	0.274	0.039	0.030
1993	0.543	0.043	0.065	0.277	0.040	0.032

Stratification Index

	white male	black male	other male	white female	black female	other female
1981	0.058	0.034	-0.007	0.206	0.154	0.079
1982	0.070	0.037	-0.016	0.190	0.145	0.061
1983	0.062	0.019	-0.025	0.182	0.121	0.059
1984	0.076	0.022	-0.020	0.170	0.114	0.050
1985	0.079	0.020	-0.023	0.163	0.110	0.046
1986	0.075	0.020	-0.024	0.152	0.105	0.038
1987	0.086	0.016	-0.027	0.129	0.098	0.031
1988	0.094	0.012	-0.038	0.129	0.100	0.033
1989	0.088	0.009	-0.030	0.120	0.089	0.035
1990	0.089	0.010	-0.027	0.109	0.085	0.029
1991	0.075	0.003	-0.029	0.102	0.076	0.021
1992	0.084	-0.002	-0.019	0.091	0.073	0.023
1993	0.072	-0.003	-0.029	0.095	0.064	0.014

Within-group Ginis

	white male	black male	other male	white female	black female	other female
1981	0.448	0.469	0.479	0.462	0.462	0.497
1982	0.479	0.472	0.508	0.464	0.463	0.505
1983	0.479	0.479	0.516	0.464	0.467	0.504
1984	0.482	0.482	0.518	0.469	0.476	0.513
1985	0.478	0.482	0.521	0.467	0.475	0.513
1986	0.486	0.487	0.531	0.470	0.479	0.517
1987	0.497	0.491	0.557	0.480	0.482	0.524
1988	0.505	0.497	0.565	0.473	0.477	0.522
1989	0.500	0.495	0.558	0.472	0.479	0.519
1990	0.500	0.494	0.556	0.473	0.476	0.518
1991	0.503	0.501	0.557	0.472	0.475	0.518
1992	0.504	0.495	0.549	0.467	0.466	0.504
1993	0.517	0.515	0.571	0.481	0.494	0.532

	Overall Gini	Between-group Inequality Term	Within-group Inequality Term	Stratification Term
1981	0.489	0.041	0.455	-0.007
1982	0.506	0.038	0.476	-0.009
1983	0.504	0.035	0.477	-0.008
1984	0.509	0.037	0.481	-0.009
1985	0.505	0.037	0.478	-0.010
1986	0.510	0.036	0.484	-0.011
1987	0.519	0.036	0.495	-0.012
1988	0.522	0.034	0.499	-0.011
1989	0.517	0.032	0.495	-0.010
1990	0.516	0.031	0.495	-0.010
1991	0.515	0.027	0.497	-0.009
1992	0.512	0.026	0.495	-0.009
1993	0.527	0.027	0.510	-0.010

Figure 1

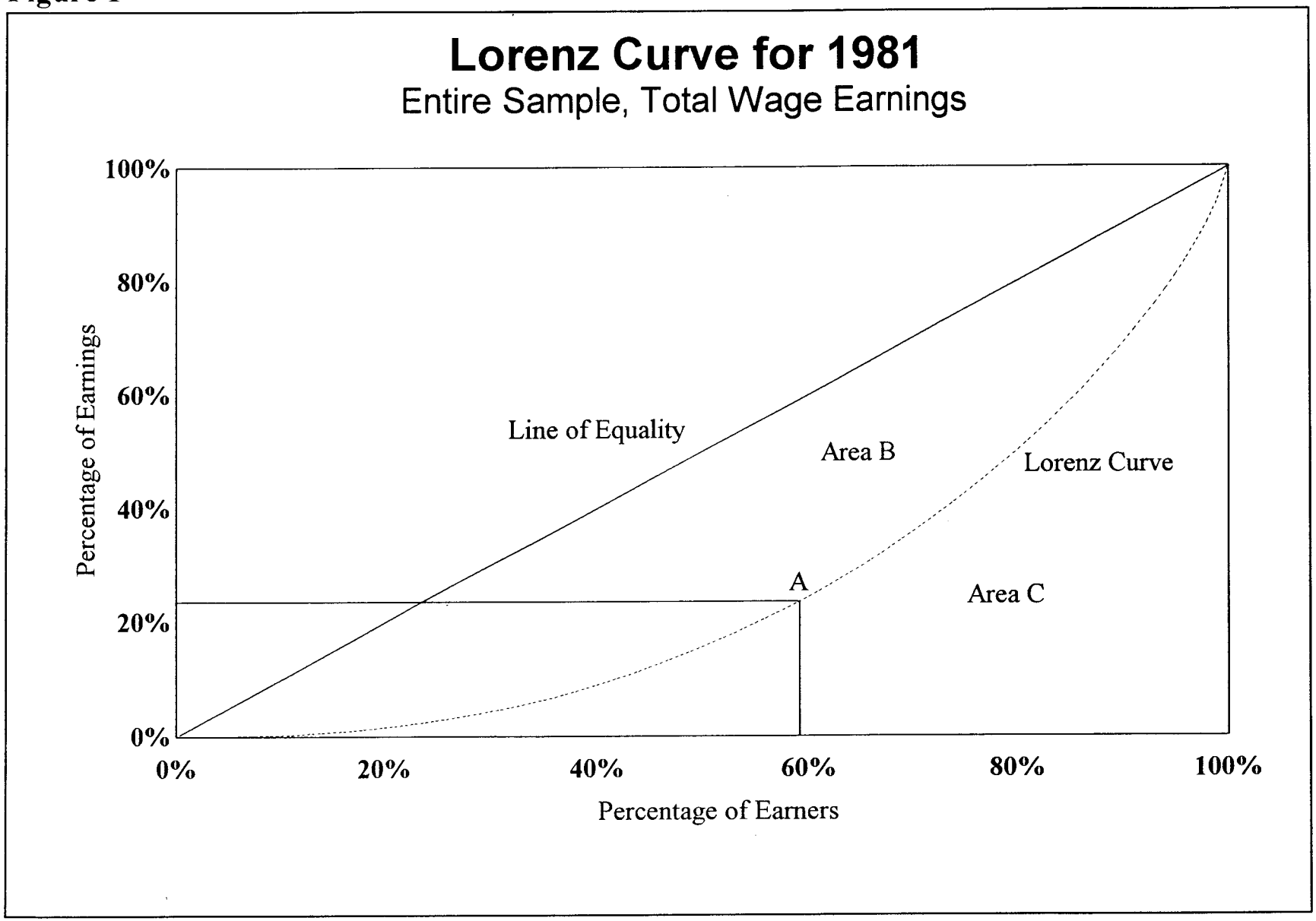
Lorenz Curve for 1981
Entire Sample, Total Wage Earnings
100%
80%
60%
40%
20%
0%
Percentage of Earnings
Line of Equality
Area B
Lorenz Curve
A
Area C
0%
20%
40%
60%
80%
100%
Percentage of Earners

Figure 2

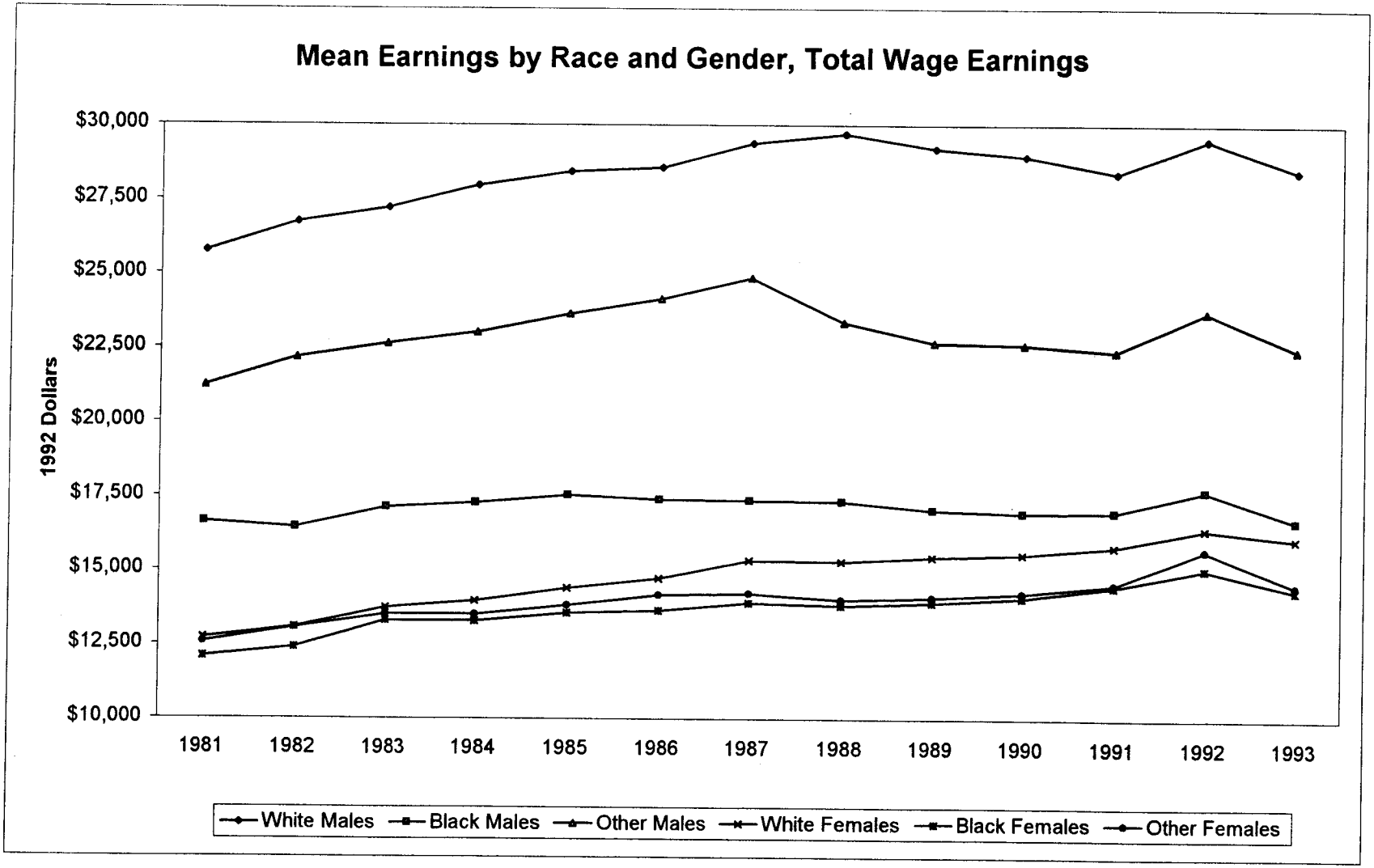
Mean Earnings by Race and Gender, Total Wage Earnings
1992 Dollars
$30,000
$27,500
$25,000
$22,500
$20,000
$17,500
$15,000
$12,500
$10,000
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
White Males
Black Males
Other Males
White Females
Black Females
Other Females

Figure 3

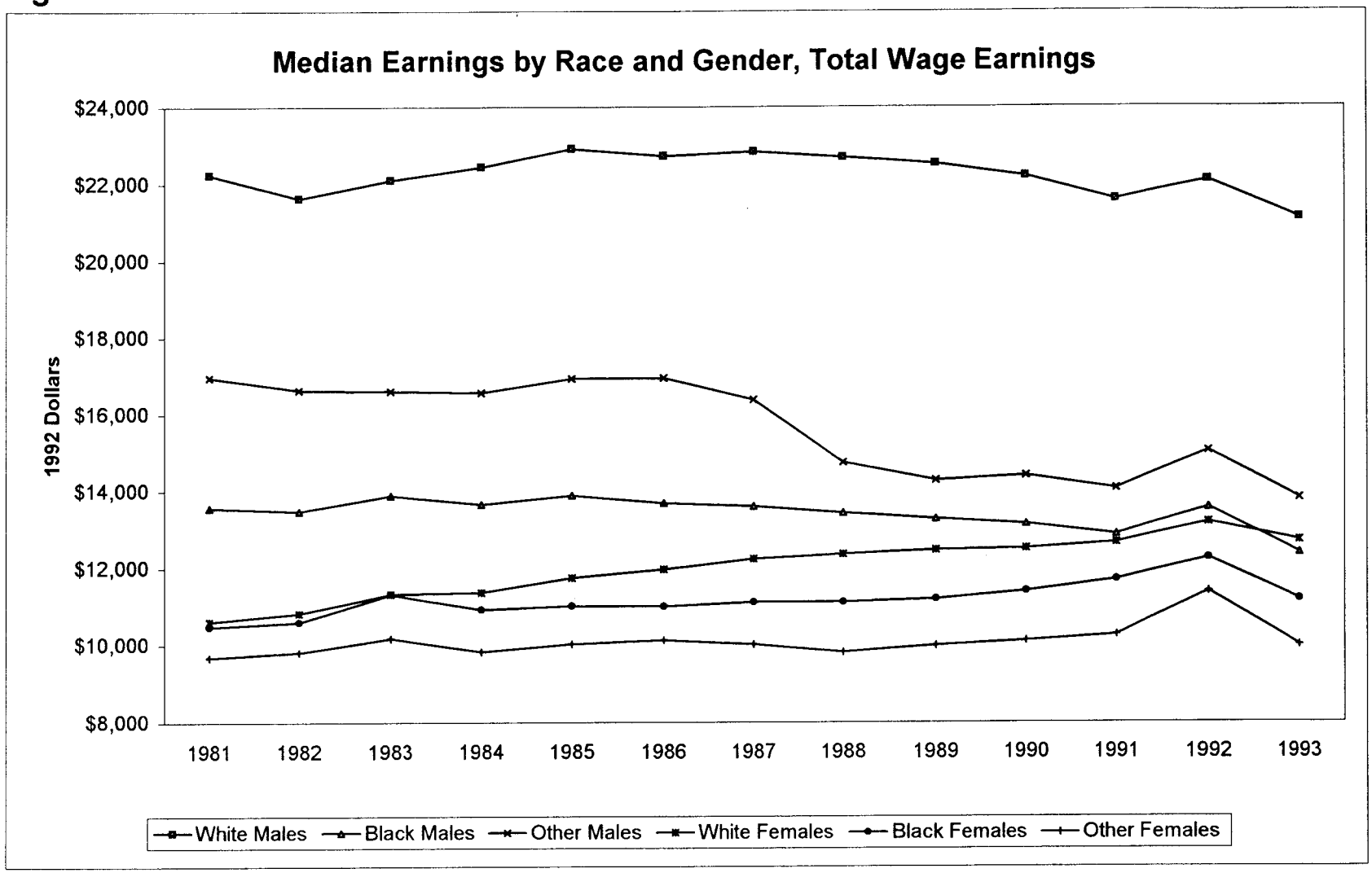
Median Earnings by Race and Gender, Total Wage Earnings
1992 Dollars
$24,000
$22,000
$20,000
$18,000
$16,000
$14,000
$12,000
$10,000
$8,000
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
White Males
Black Males
Other Males
White Females
Black Females
Other Females

Figure 4 Representative Earnings Distributions