

Earnings inequality in South Africa, 1995-1998

Chapter 4

Debbie Budlender

Introduction

The 1998 *Poverty and Inequality Report*¹ notes that, while South Africa is an upper middle-income country in terms of per capita income, a large number of the country's citizens live in poverty. While this is true of many other middle-income countries, South Africa's income distribution is among the most unequal in the world. The 1996 World Development Report found that only Brazil had a higher level of inequality than South Africa as measured by the Gini coefficient (quoted in May, 1998:23). Our own income and expenditure survey of 1995 gave an overall household Gini coefficient of 0,59 (Hirschowitz, 1997:28).

Stats SA now has data from household surveys conducted in October/November in five consecutive years, 1994 to 1998. The data from four of these datasets provide the basis for analysis as to what has happened in terms of income distribution in the first years after the first democratic elections of 1994. Unfortunately the first survey of 1994 does not provide suitable data for comparison due to both differences in the way income questions were asked and limitations in the sampling method. The pages which follow first examine the trend in the overall pattern of inequality over the four years 1995 through 1998. We then go on to look at trends and patterns of inequality in respect of population group and gender.

The Gini coefficient is a measure of monetary inequality. Recent poverty analysis, inspired by the work of Nobel laureate Amartya Sen (Sen, 1981) and others, has increasingly focused on broader conceptions of poverty which measure the ability of individuals and households to command the resources necessary for a decent standard of living. The human development index, for example, adds measures of health and education to a monetary measure in order to arrive at a broader measure. Stats SA's index, described elsewhere in this publication, is a further elaboration of a multi-factor approach to measuring people's well-being.

The analysis here is confined to monetary income. It is further confined to earned income i.e. the money that individuals within households earn in salaries and wages and the money that they earn in self-employment, whether as employers or working alone. Earned income is by no means the only form of income for South African households. Previous research suggests that poor South African households obtain 40% of their income from wages and a further 5% from self-employment. Non-poor households, on the other hand, obtain 72% of their income from wages and 6% from self-employment. These figures implicitly point to the role of the state in supporting poor people. The same research shows that poor households receive 26% of their income in state transfers such as old age pensions, while non-poor households receive only 3% of their income from this source (May, 1998:36). Focusing on earned income thus provides an approximate measure as to what the inequality situation would be without such state assistance.

¹ May, J. (1998). *Poverty and inequality in South Africa*. Report prepared for the office of the executive deputy president and the inter-ministerial committee for poverty and inequality. Praxis Publishing, Durban.

The analysis here builds on that of other researchers as well as that of Stats SA itself. In 1998 Stats SA produced *Unemployment and employment in South Africa*. That publication examined unemployment trends in the October households surveys (OHS) of 1994 to 1997. The official unemployment rate was shown to have dropped from a 1994 level of 20,0% to 16,9% in 1995, but then risen again sharply to 22,9% in 1997. Since then the rate has risen still further. In terms of population group, the African unemployment rate was highest across the period, followed by that of coloured, Indian and white people. The differences between population groups were marked. In 1997, for example, the respective rates were 29,3%, 16,0%, 10,2% and 4,4%.

Within each population group and across all years the unemployment rate was markedly higher for women than men. In 1997 the overall unemployment rate for women was 28% while that for men was 19%. The publication *Women and men in South Africa* goes one step further to reveal the expected differences in earnings between those women and men of the different population groups who were lucky enough to be employed in 1995 (Budlender, 1998:24-5).

All these findings have relevance for the current analysis given its focus on earned income. The difference between this earlier work and the current publication is that the latter moves beyond the earners themselves to examine the outcomes both for them and those within their households who depend on their earnings. This aspect has also been covered before by Stats SA. *Earning and spending in South Africa* (Hirschowitz, 1997) analyses data from the 1995 income and expenditure survey. Among other issues, it looks at the differences between households headed by women and men, and between households from the different population groups. It finds, for example, that the average household income of a male-headed household was R48 000 in 1995, compared to R25 000 for a female-headed household. African households were found to have the lowest average annual income across all provinces while white households had the highest (Hirschowitz, 1997:12-3). The pages below elaborate on this analysis by looking beyond the household head to what happens to individual male and female members of households.

Methodology

Calculating income

The questions in the October household surveys have changed somewhat over the years as Stats SA has endeavoured to improve its measurement of what is happening in the society. The datasets are thus not completely comparable in respect of all variables. In this analysis we focus on income from wages and salaries. The employment questions have been modified in important ways, particularly between 1995 and the later years. While we believe that the data is similar enough to engage in comparative analysis, we nevertheless point out below where and how changes in questions and method may have influenced the findings.

One of the differences across years relates to the way in which the income questions are asked and answered. Firstly, in most years the respondent is given a choice as to whether to provide an exact earnings figure or instead indicate a bracket, or income interval. Secondly, the income intervals offered for the second option change over the years.

In the later years the overwhelming majority of respondents have their income recorded within an

income interval rather than as an exact figure. In 1995, on the other hand, approximately three-quarters of people with non-zero wages or salary recorded exact amounts. The inequality calculations below require data in the form of amounts rather than intervals. Where income was given as an interval, this was converted into a rand amount by taking the logarithmic mean of the two endpoints of the interval for all intervals except the bottom non-zero one. For the bottom interval, the rand amount was taken to be two thirds of the top endpoint for all years except 1995.

The reason for the different approach to 1995 relates to the difference in intervals over the years. In 1995 the first non-zero monthly interval was R1–R999. In 1996 the first non-zero monthly interval was reduced, to R1–R199, as far too large a proportion of earners were found within the single interval of the previous year. The intervals remained constant for the following two years of the survey. Taking two-thirds as the estimate for the extremely large first non-zero interval for 1995 would have clearly yielded an over-estimate of actual income. In that year the logarithmic mean was therefore used for all intervals.

Pay and earnings

As noted above, the analysis below looks at both the wages and salaries earned by employees and the income accruing to the self-employed.² Wages and salary alone are referred to as ‘pay’. Wages and salary together with self-employed income is referred to as ‘earnings’. The analysis shows similar trends for the two measures, but more stability in the wage/salary measures. This is understandable. At the level of the individual, wages and salaries are less likely to fluctuate between months than earned income does. At a methodological level, measuring self-employed income involves a calculation based on turnover less expenses, and the data for both of these variables is far less accurate than that for wages and salaries.

With both the pay and earnings measures one has to decide how to deal with missing data. Stats SA has achieved a remarkably high rate of response to questions in the OHS, even where these relate to income. In 1995, for example, only about 1% of wage and salary employees would provide neither an exact amount nor an interval. Nevertheless, the question remains as to how one deals with this missing data in analysis.

For the purposes of the analysis which follows, all missing data were set to zero. This could introduce some bias as generally it is wealthier people who are less inclined to reveal their earnings. The effect of the bias should be minimal because of the low number of non-responses.

The income figure for self-employed individuals is calculated by taking their reported turnover per month and subtracting the monthly costs given for wages and other costs. Here there is the possibility of non-response on up to four items. Where the turnover was not given, the self-employed net figure was set to zero. Where other amounts were not given, they were taken as zero i.e. nothing was subtracted from the gross turnover. Where the net amount became less than zero after the subtraction, the net amount was set as zero. All these complications add to the lesser reliability of the earnings calculations below when compared to those based on employee pay alone.

² Domestic workers were classified as self-employed in 1995 and as employees thereafter. For purposes of comparability, the data were converted so that they would be included among wage and salary earners throughout the period under examination.

Computing individual income

In the analysis which follows, we look at individual income rather than household income. The method consists in adding together the earned income accruing to all individuals within a particular household and then dividing the sum by the total number of household members. This differs from income distribution analysis in *Earning and spending in South Africa* which takes the household as the unit.

Our first reason for adopting the individual approach relates to the weight one attaches to poorer as opposed to wealthier people. Overall, poorer households tend to be larger in terms of number of members than richer households. There will therefore be proportionately fewer poor households than there are poor individuals. An individual approach gives more weight to poor people.

Our second reason for adopting the individual rather than the household as unit of analysis is so as to be able to do meaningful analysis by population group and gender. In respect of population group previous analysis assumed, as was fairly reasonable during apartheid, that all members of the household belonged to the same group. This assumption will become increasingly untenable as the years pass.

In respect of gender the situation was never as simple, as most households contain both male and female members. In the past the approach was to compare households with male and female heads. The analysis invariably revealed significant differences between the two groups of households. It said nothing, however, about the male and female individuals who would be found in both female- and male-headed households. The distinction reflected structures and life cycles of households rather than individual well-being. It was further complicated by differing conceptions across population and other social groups as to what constituted a household head.

Our method is still not accurate on gender distribution. In the analysis which follows we calculate the sum of all wage and salary income accruing to members of a particular household and then divide that figure equally between all members. This approach ignores inequalities within the household. Both evidence from elsewhere and commonsense suggest that household members do not have equal power over and access to the available income. In particular, those who bring income into the household are more likely to have decision-making power over what happens to it. Because women are less likely to be employed, and tend to earn less than men when they are employed, women could well be getting less than their equal share of household income. The analysis which follows thus probably underplays gender differences.

A final methodological point is that we have used simple mean per capita figures rather than adult equivalences. Some income analysts argue that children, in particular, require less money than adults and that in deriving per capita income figures one should therefore consider a child as some proportion of an adult unit. Some analysts go further and suggest that women require less money than men. In choosing a simple mean we recognise Angus Deaton's argument that 'economies of scale are likely to be more pronounced in higher income families than in families which spend a larger proportion of their income on food and essential commodities' (quote in May, 1998: Appendix B: 9). We are thus again, as with our choice of individual rather than household, focusing on the poor.

Results

Inequality

The Gini coefficient and the related Lorenz curve are among the most common methods of measuring inequality. The procedure involves ranking all income units (individuals in this analysis, households elsewhere) in ascending order of magnitude of income and then graphing the cumulative income of the units against the cumulative percentage of units. In a perfectly equal society where each unit receives the same income, the resultant Lorenz curve will coincide exactly with the diagonal. In reality the graph will be a shallower or deeper curve to the right of the diagonal.

The Gini coefficient expresses the area between the Lorenz curve and the diagonal as a fraction of the total triangle under the diagonal. In a perfectly equal society there is no area between the curve and the diagonal and the Gini coefficient is zero. In a perfectly unequal society, where one individual or household has all the income and all the others have nothing, the area between the curve and the diagonal equals the triangle and the Gini coefficient is equal to one. The nearer a Gini coefficient is to 1, the more unequal the society.³

Figure 1 graphs the Gini coefficients for pay and total earnings for each of the four years between

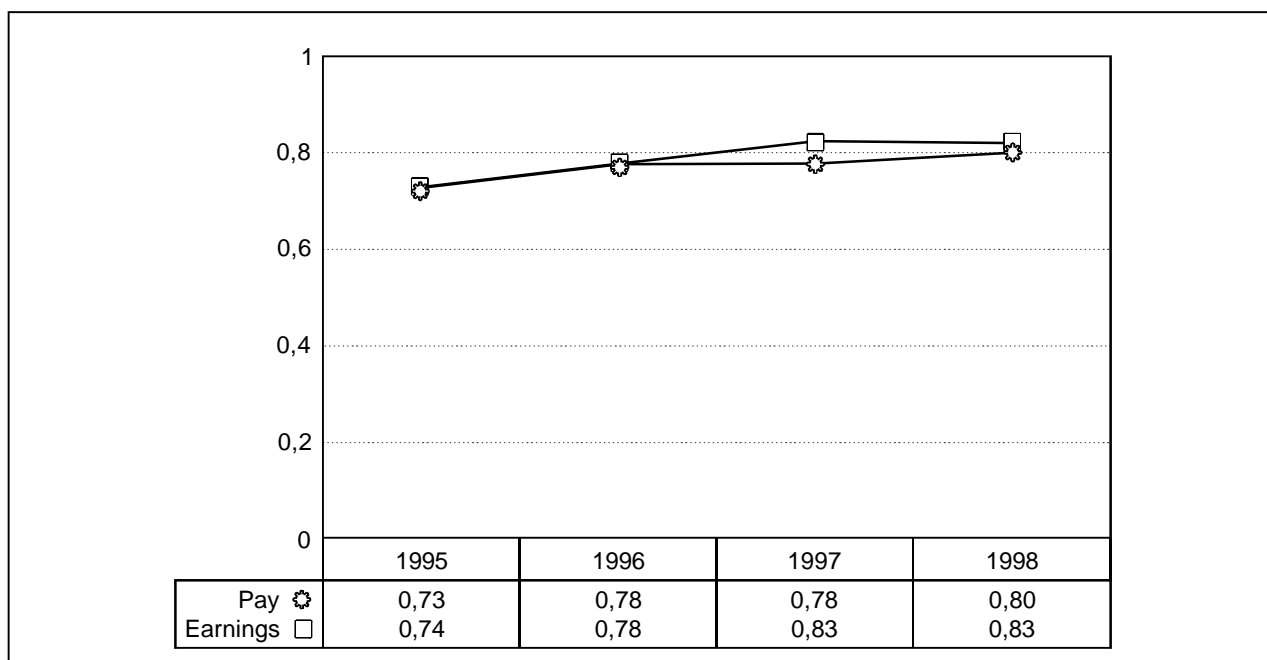


Figure 1: Gini coefficients on pay and earnings, 1995-1998

³ The formula used to calculate the Gini coefficient² was as follows:

$Gini = (2 * \text{covariance}(Y, F(Y))) / \text{mean}(Y)$ where Y is income and $F(Y)$ is the cumulative distribution of total household income in the sample (i.e. $F(Y) = f(y_1), \dots, f(y_n)$) where $f(y_i)$ is equal to the rank of y_i divided by the number of observations (n)).

The formula used to calculate covariance was as follows:

$\text{Covariance}(\text{percap}, F(Y)) = 1/n \sum ((\text{percap}_i - \text{meanpercap}) * (F(Y)_i - \text{mean}F(Y)))$.

Thanks to Ingrid Woolaard for providing the formula.

1995 and 1998. The measures in respect of both pay and earnings go in the same direction, but increase faster for total earnings than for pay. The graph suggests that inequality increased in respect of both pay and total earnings over the period, but increased faster in respect of self-employed earnings than for wages and salaries.

As noted above, the income and expenditure survey of 1995 yielded an overall Gini of 0,59 based on total income or expenditure. The income and expenditure questionnaire distinguished between salary and other types of income. When the Gini calculations are done on household salary income alone, the measure rises to 0,69. Our figure here for 1995 is 0,73. The four-percentage point difference can be explained by our use of the individual as the unit. Because poorer households tend to have more members, we can expect the individual measure to be higher than that for households.

Under apartheid, population group was one of the most important determinants of an individual's income. The analysis below will show that this factor remains an important determinant of income today. Nevertheless, with a lessening of legal and other formal restrictions, one can expect more black people to have been able to access income than previously. This has not, however, been possible for everyone.

Figure 2 compares the trend in Gini coefficients for pay for African, coloured and white people over the four years. (The number of observations for Indian income-earners was felt to be too small for reliable analysis.) For all three groups the graph shows a rising trend in inequality. The level of inequality among African people is higher than that for the other groups throughout the period. The levels of inequality for the white and coloured groups are very similar throughout the period.

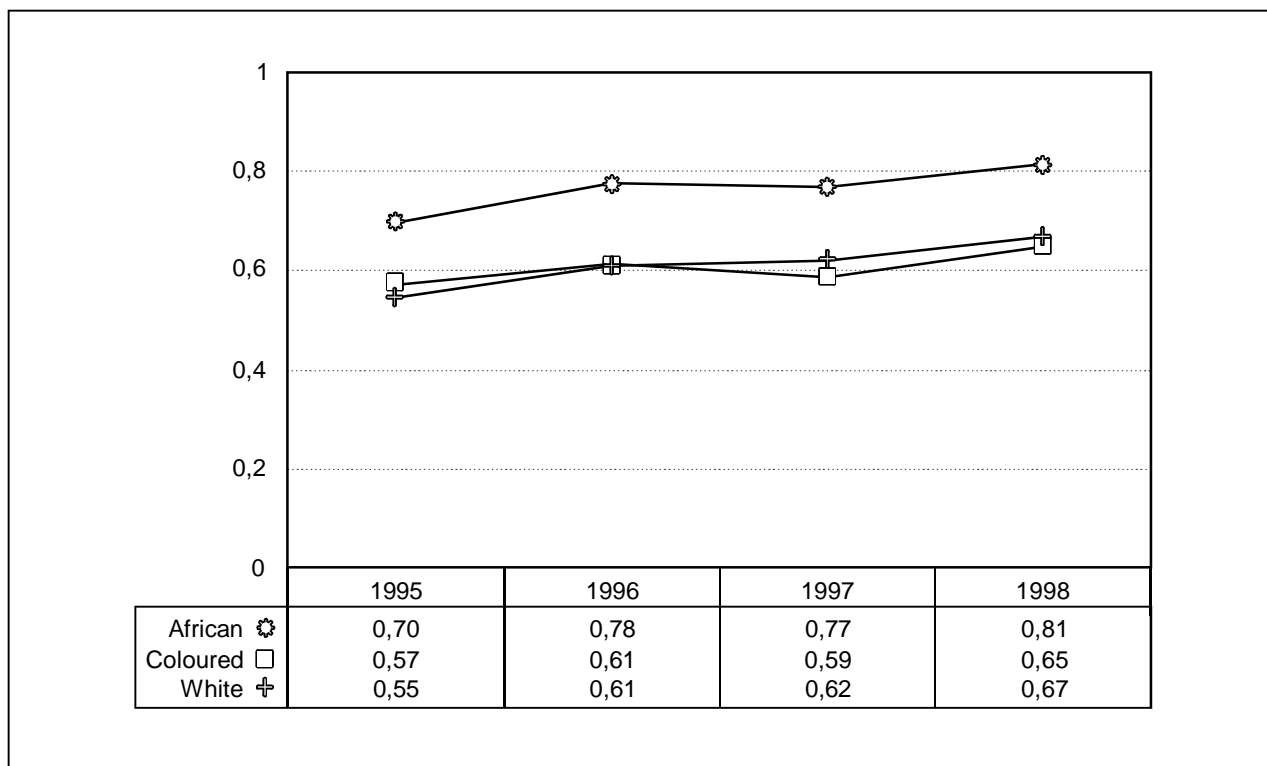


Figure 2: Gini coefficients on pay for African, coloured and white people, 1995-1998

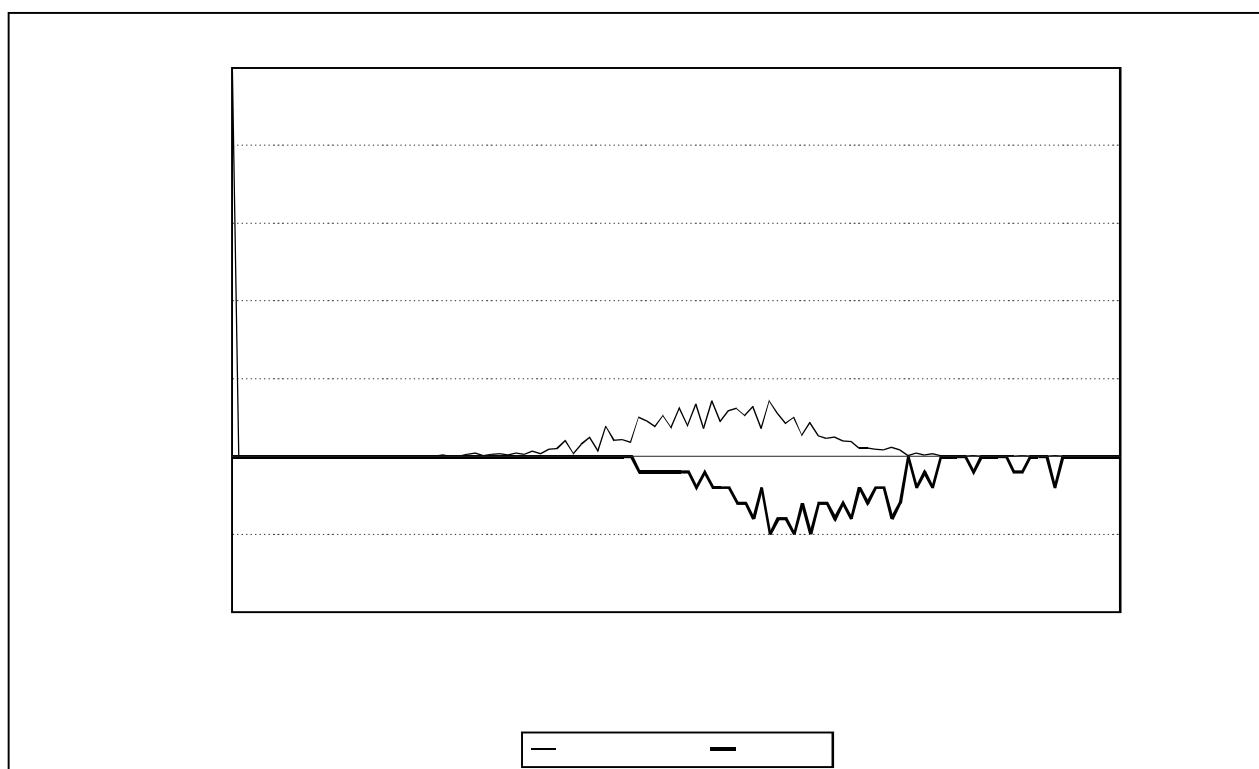


Figure 3: Dikhanov diagram of pay, 1998

A Dikhanov diagram represents an alternative method of illustrating inequality.⁴ The diagram does not provide a single figure as the Gini does. It does, however, illustrate graphically the effects of unequal distribution. In the Dikhanov diagram, the proportion of total population (above the X axis) and the proportion of total income (below the X axis) are plotted against log income. The diagram is usually constructed in terms of total income or expenditure, where the units are households or even countries. Figure 3, following the approach adopted in the rest of this paper, is constructed on the basis of per capita pay in 1998 and the units are individuals.

The sharp initial peak above the line in Figure 3 illustrates the large proportion of individuals living in households with no income from wages or salaries. The income line at this stage is flat, and on, rather than below the line, indicating that these people account for no part of total pay income. The later humps above and below the line echo the pattern found in all Dikhanov diagrams, with population concentrated at lower levels of (log) income, but the smaller proportion of people at higher income levels accounting for a disproportionate proportion of the total income.

Population group and gender

The Gini coefficient provides a single measure of inequality within a population or sub-group. To look at differences within the group, one needs a different form of analysis. In this section we look at

⁴ Thanks to Anne Harrison for assistance with the Dikhanov diagram.

the proportion of male and female individuals within the different population groups who are at different income levels. For each year we have arrived at four income brackets which correspond roughly with the quartiles of per capita income for that year.

The cut-off points are not exact quartiles. Firstly, over 25% of the population in each year was living in households with zero earned income. This at first seems implausible as every household must have some income if it is to survive. The anomaly is explained by the fact that the analysis here looks only at earned income and excludes grants, remittances and other sources of non-earned income. The result is that the 25% cut-off points work out as zero, which does not allow for a distinction between the first and second quartile. Instead, the first category in the analysis which follows comprises those with zero per capita income, while the second category is those with non-zero income but where the income is not greater than the median.

The second complication arises because of the clustered nature of the income data given its derivation from income intervals. The result is that the 'medians' below provide a cut-off point near the mid-point of the population, but not exactly on it, while the '75%' cut-off point is near that percentage but not exactly on it. All these approximations should not, however, affect the comparability of gender and population group patterns within a particular year.

Table 1 gives the cut-off points used in the analysis as 50% (median) and 75%. The figures are counter-intuitive for 1995 when compared with the figures for 1996 through 1998 in that the earlier figures are much higher than those for the later years. The higher figures for 1995 are partly explained by the large first interval bracket in the questionnaire for that year (R1 000 as opposed to the R200 in the later three years). A further factor explaining the higher figure is the greater number of employed people given lower unemployment rates. In 1995, 34% of individuals aged 15 and above had non-zero pay recorded, compared to 28% or fewer for the later years. In 1995, 68% of all individuals were living in households with non-zero pay income, compared to only 55% of individuals in the later three years. The greater disparity between 1995 and later years in terms of percentages of earning-age individuals and percentages of households reflects clustering of employed people within the fortunate households as well as higher dependency rates within poorer households.

Table 1: Cut-off points for categorical analysis (Rands per month)

Cut-off points	Category	1995	1996	1997	1998
75%	Pay	455	353	325	370
	Earnings	525	377	400	450
50%	Pay	143	53	50	57
	Earnings	170	63	86	94

Figure 4 shows the distribution of monthly per capita income of individuals for the different population groups across the four quartiles for 1998. The differences are stark. Half of all African individuals are shown to be living in households with no wage or salary income, compared to 24% of coloured, 28% of Indian and 36% of white. At the other end of the scale, only 19% of African individuals were living in households with per capita pay of more than R370 per month, while approximately six in ten Indian and white individuals were in this position. Among the households with non-zero pay earnings, there are very few white households where pay was R370 or less per capita.

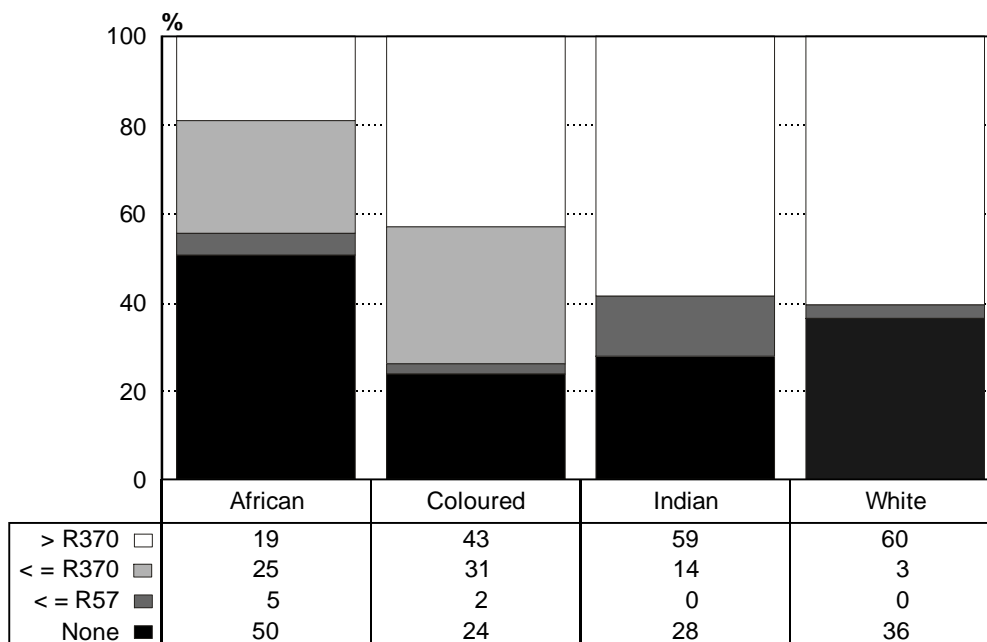


Figure 4: Distribution of monthly per capita pay income by population group, 1998

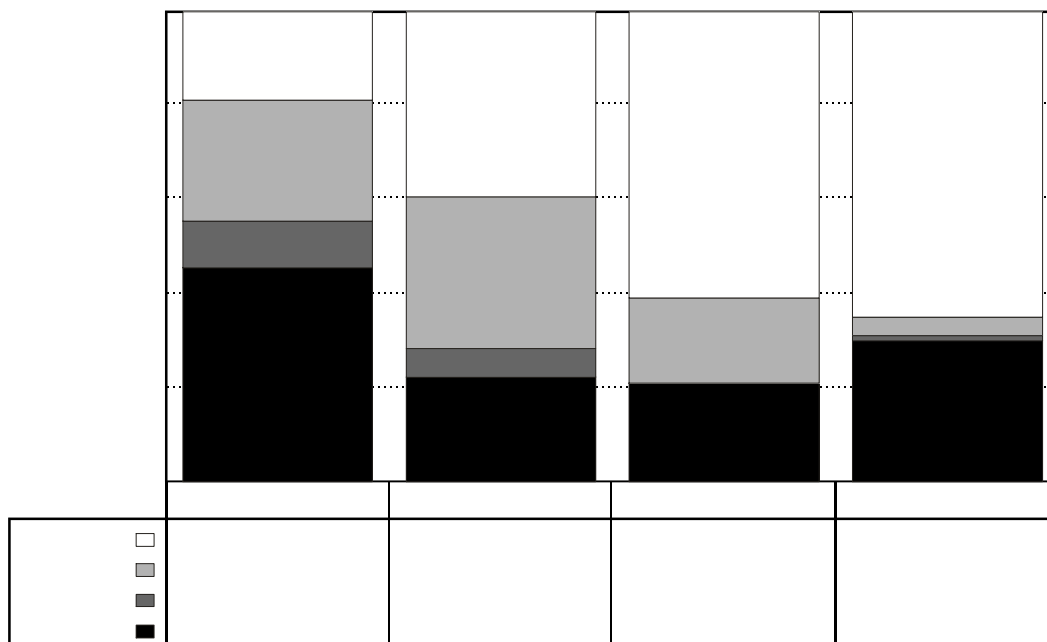


Figure 5: Distribution of monthly per capita earnings by population group, 1998

Figure 5 is similar to Figure 4 except that it refers to total earnings rather than only wage and salary pay. The percentage of individuals in the zero category drops for all population groups, but most markedly for the Indian group. The percentage of African people in the top category remains constant, while that for white people increases from 60% to 65%. The higher percentage of white than Indian individuals in households with zero pay income in this and the previous graph probably reflects a higher percentage of white pensioners living alone.

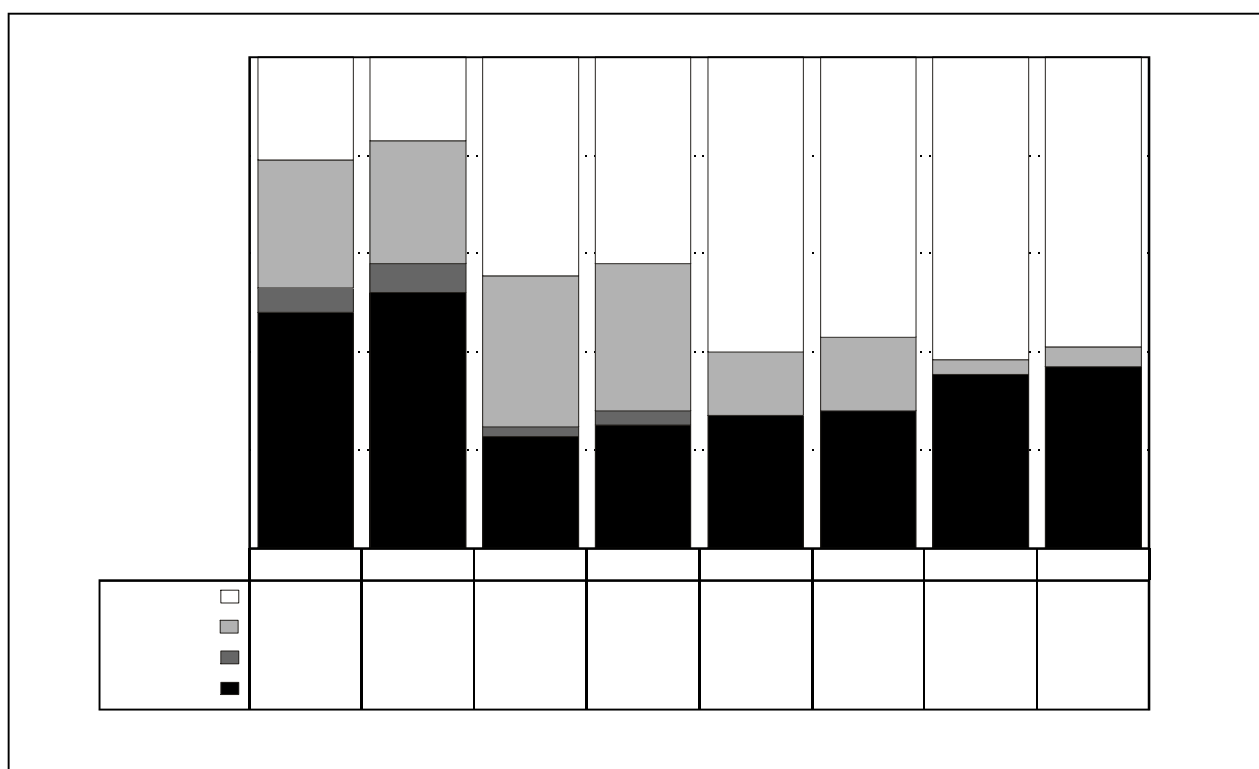


Figure 6: Distribution of monthly per capita pay income by population group and gender, 1998

Figure 6 elaborates Figure 5 by adding gender. It shows the percentage of individuals in each gender-population group category in the first, second, third and fourth 'quartiles' in 1998 in respect of pay. The graph shows that within each population group a larger percentage of female than male individuals live in households with zero pay income and a smaller percentage of female than male individuals live in households in the top quartile of per capita pay.

The difference between male and female individuals is consistent across all years. In each case a larger percentage of females than males are in the zero pay category and a smaller percentage are in the top pay category. Overall, then, women and girls are more likely than men and boys to be living in households in which there are no wage earners. Where there are wage earners in their households, they tend to be fewer and/or have lower pay.

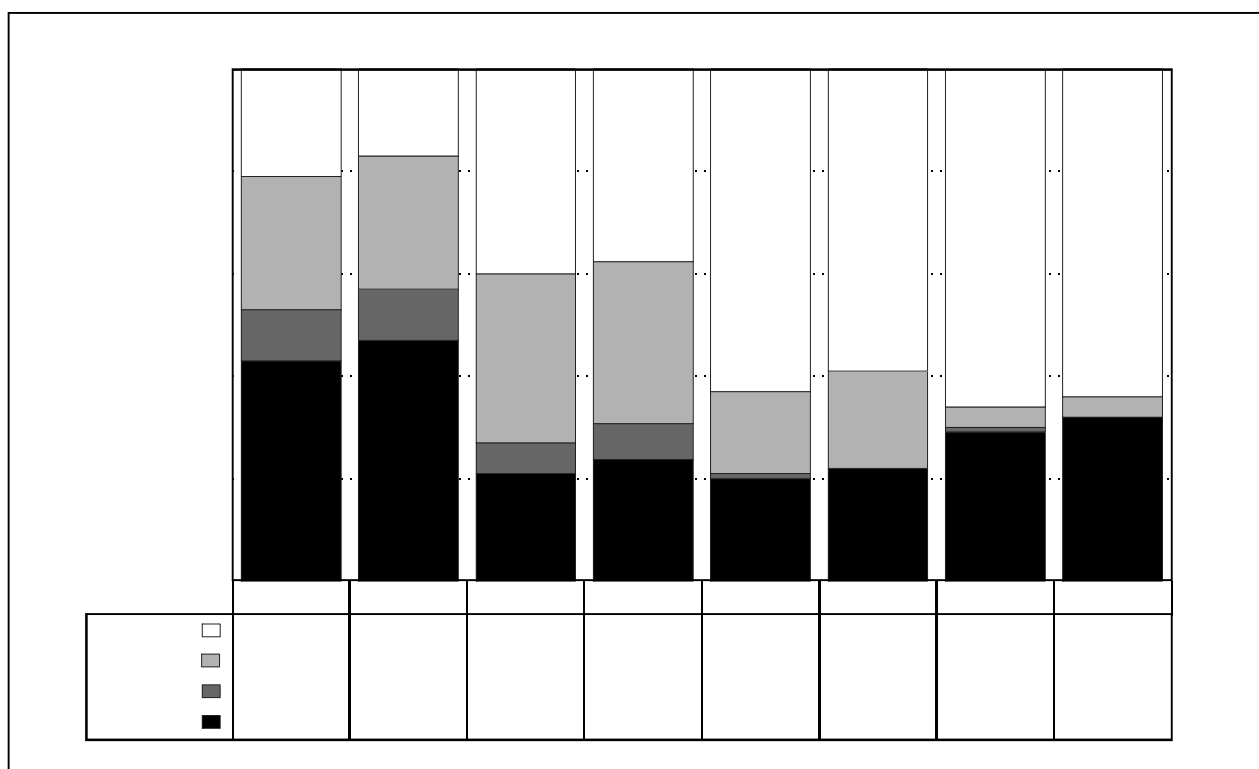


Figure 7: Distribution of monthly per capita earnings by population group and gender, 1998

Figure 7 completes the picture by showing the population and gender distribution across quartiles in respect of total earnings. The pattern is very similar to that in the previous graph, with larger percentages of female individuals with zero income and smaller percentages in the top quartile.

Conclusion

The first years of post-apartheid South Africa have seen concerted attempts by the government to address the race and gender inequalities in the society. In respect of employment these initiatives include the Employment Equity Act which came into operation in late 1999. The preceding pages have examined what has happened in terms of the distribution of earned income among male and female South Africans from different population groups, before this date.

Overall the analysis suggests that the country still has high levels of inequality – levels which appear to be somewhat higher than they were in 1994. This is to be expected given the rising level of unemployment over the period.

In terms of population group, the inequalities within the African group have increased. The explanation for this phenomenon is more positive as it reflects the fact that more African people have been able to access higher-paying positions over the last few years. In terms of gender, the patterns are consistent over the period. Females are more likely than males to live in households with no earned income. Where there is earned income, it is likely to be lower than that of households in which males live.

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