Very Preliminary Draft

The Impact of Race on Earnings and Human Capital in Brazil, South Africa and the United States

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Abstract:

Racial and ethnic differences in education and earnings are an important focus of policy debates in Brazil, South Africa, and the United States. This paper uses large household surveys from these three countries to analyze the impact of race and ethnicity on labor market earnings, schooling, and the returns to schooling for both men and women. Wage regressions are used to estimate the gap in earnings between racial groups with and without controls for schooling and other characteristics. The results indicate that South Africa has a much larger gap between white and gap earnings, both adjusted and unadjusted, than Brazil and the United States. After controlling for education, age, and region, the wage advantage of white men relative to African men in South Africa is 240%, compared to gaps of 30% and 16% in Brazil and the United States. Given this large racial gap in the South Africa labor market, it is surprising to find that the racial gap in education has closed much faster in South Africa than in Brazil, with a much smaller racial gap in education after controlling for parental schooling.

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Introduction

Racial and ethnic differences in earnings are an important component of income inequality in many countries with high levels of inequality. These earnings gaps may result from a number of underlying causes, including racial and ethnic differences in opportunities to acquire human capital, differences in geographical location, and differences in the rates of return to human capital in the labor market. This paper looks at three countries in which the impact of race and ethnicity on earnings and schooling plays a significant role in research and in public policy debates – Brazil, South Africa, and the United States. These countries have important differences in the historical background of racial and ethnic groups and in the legal and institutional environment affecting these groups. While racial and ethnic classifications may be highly subjective, with potentially large differences in the meaning of such classifications across these three countries, it is nonetheless instructive to compare the impact of race and ethnicity on human capital and labor market outcomes across countries.

South Africa and Brazil have two of the highest levels of income inequality in the world (World Bank, 1999). Inequality in the distribution of education is both a cause and a consequence of this high inequality. Both countries have lower levels of mean schooling than would be expected given their relatively high per capita income levels, a situation that is almost surely related to the extreme income inequality. Education is widely discussed as an important determinant of inequality in both countries. Unequal distribution of education, both in quantity and quality, is an important determinant of inequality in labor market earnings. Education may also play an important role in the intergenerational transmission of inequality. Children whose parents have limited schooling tend to end up with less schooling themselves, reinforcing existing inequality across generations.

In addition to looking at labor market outcomes, this paper analyzes the transmission of schooling across generations. The data suggest that South Africa has had surprisingly better performance than Brazil in terms of both mean schooling and schooling inequality. The paper also demonstrates some striking differences in the intergenerational transmission of human capital in the two countries. Although both countries have a high fraction of adults with very low schooling, the penalty to children of having uneducated parents is much smaller in South Africa than in Brazil. The curve describing the relationship between parental schooling and children's schooling has both a higher mean level and a flatter slope in South Africa than in Brazil.

The Data

The analysis is based on large household surveys collected by government statistical agencies in each of the three countries. The South African data set is the 1997 October Household Survey (OHS), a nationally representative sample with about 32,000 households and 140,000 individuals

collected by Statistics South Africa. The Brazilian data set is the 1999 Pesquisa Nacional de Amostra de Domicílios (PNAD), a nationally representative sample with about 116,000 households and 350,000 individuals collected by the IBGE, the Brazilian statistical bureau.[1] The United States data set is the March 2000 Current Population Survey (CPS), a nationally representative survey with about 47,000 households and 140,000 individuals collected by the U.S. Bureau of Labor Statistics and the U.S. Census Bureau. The surveys are relatively similar in design and purpose, serving as the primary source of information on employment and earnings. Although measures of schooling and earnings are not identical in the surveys, the information is sufficiently comparable to permit interesting cross-national comparisons.[2] Unfortunately none of the surveys provides data regarding school quality, an important dimension of racial differences in schooling and earnings in all three countries.[3]

Racial and ethnic differences in schooling and earnings are an important focus of research and policy debate in all three countries. Issues of race and ethnicity clearly differ substantially across countries, with important differences in the historical background, the legal and political environment, and the social meaning of racial and ethnic identification. It is well beyond the scope of this paper to analyze these complex issues in each country. The paper will take as given the racial and ethnic classifications used in the labor market survey for each country, using these classifications to analyze the impact of race and ethnicity on education and earnings. There is no assumption that the meaning of "white" or "black" is comparable across countries, or indeed that these terms have any particular meaning beyond the fact that the individual survey respondents self-identified themselves with some given classification.[4] The classifications are used in order to provide evidence on the impact of race and ethnicity on schooling and earnings in the three populations, with the analysis done in a way that permits comparability across countries.

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[1] The PNAD samples at different rates in different states – the sample weights provided by IBGE are used throughout the analysis here to adjust for differential sampling.

[2] The South African survey does not distinguish between Grades 1, 2 and 3 (Substandards A and B and Standard 1) and there is no distinction above Grade 12 (Standard 10) other than receiving a university degree. The Brazil survey provides a more complete distribution, although in some of the analysis below it will be collapsed above Grade 11 (completion of secondary school) for comparability.

[3] Hanushek et al. (1996) provide some evidence on the effects of school quality in Brazil. Fedderke et al. (1998) document racial disparities in school quality in South Africa. Case and Deaton (1999) provide evidence of important links between school quality and earnings in South Africa.

[4] Note that in many cases the racial/ethnic classification will not have been chosen by the particular individual being analyzed in the data, but by some other individual in the household who was the respondent for the survey.

Table 1 provides details on the population classifications used in the three countries. The South Africa OHS asks respondents to identify themselves in one of four population groups – African/black, colored, Indian, and white. As seen in Table 1, 74% of individuals age 25-50 classify themselves as African/black, 14% as colored, and 9% as white. These three largest population groups will be used in the analysis below. The Brazil PNAD asks respondents to indicate their "race or color" – white (branca), black (preta), brown (parda), yellow (amarela), or indigenous (indigena). As seen in Table 1, 54% identify themselves as white, 40% as brown, and 5% as black. The United States CPS asks individuals to identify themselves as white, black, American Indian, or Asian. In a separate question respondents also report whether or not they are Hispanic. Following much of the U.S. research in this area, the analysis below will use three non-intersecting groups – non-Hispanic whites, non-Hispanic blacks, and Hispanics. As seen in Table 1, 70% identify themselves as white, 17% as Hispanic, and 9% as black. It is worth noting that the proportion black in the United States is almost identical to the proportion white in South Africa, slightly below 10%.

The Evolution of Racial Differences in Schooling

The household surveys for each country can be used to analyze the history of racial and ethnic differences in schooling in each country, interpreting the age pattern of schooling as a history of schooling across cohorts.[5] Figure 1 shows the relationship between age and schooling in Brazil for those age 20-49 in the 1999 PNAD (corresponding to cohorts born between 1950 and 1979. Brazil has had disappointing performance in recent decades in the expansion of schooling, relative to its level of per capita income (Birdsall and Sabot, 1966). Mean schooling of whites is about 8 years of schooling for men and 9 years of schooling for women in the younger cohorts, with roughly a two-year gap between whites and the two non-white groups. There is very little difference between the pardo and preto groups for any age group. The white schooling advantage has declined somewhat over time, with a gap of almost 3 years for the older cohorts. Comparing the top panel for males with the bottom panel for females, it is clear that a female advantage in schooling has emerged among younger cohorts, with a female advantage of almost one year of schooling for all three racial groups among 20-25 year-olds.

[5] The cross-section surveys will differ from the true cohorts histories to the extent that mortality and migration have selected non-randomly on cohorts over time. Since lower education groups will presumably have had higher mortality, the patterns shown here are likely to understate actual improvements in schooling over time. The effects of selective immigration or emigration are unlikely to be important in Brazil, but may have effects that are difficult to predict in South Africa and the United States.

Figure 2 shows the relationship between age and schooling in South Africa using the 1997 OHS. Several features are noteworthy. White schooling has been relatively constant over time, with a mean of around 12 years for all age groups. Large racial disparities between whites and the two non-white groups are evident in the figure, with a white advantage of over six years among older age groups (Fedderke et al., 1998). In contrast to Brazil, however, which has had a relatively constant racial gap in schooling, the gap has narrowed substantially in South Africa, with a gap of around three years among younger cohorts. African and coloured schooling is relatively similar, especially at younger ages. Comparing the top and bottom panels of Figure 2, schooling of men and women is almost identical for all population groups, with a slight female advantage among younger cohorts. Perhaps the most striking feature of the South African data is the fact that the mean schooling of African and coloured men in the younger cohorts is about one year higher than the schooling of white Brazilian men. Young African men in South Africa have around three years of schooling more than Brazilian men classified as preto and pardo.

Figure 3 shows the relationship between age and schooling in the United States using the March 2000 CPS. The schooling of all three groups has been relatively constant in the U.S., with a gap between whites and blacks of less than one year for all cohorts. Hispanics have over two years less schooling than whites for both males and females. As in Brazil and South Africa, there is very little difference in the schooling of males and females in the U.S., with a slight advantage of females in all three population groups.

The patterns in schooling documented in Figures 1-3 will be important in analyzing the racial gap in earnings in the following section. For example, the fact that the mean schooling for blacks and whites is relatively similar in the United States means that schooling is unlikely to explain a large part of the black-white wage gap in the U.S. There is much more scope for schooling to play a significant role in explaining racial gaps in wages in South Africa and Brazil.

The Impact of Race on Earnings

The analysis of the impact of race on earnings begins with the estimation of a standard human capital wage equation of the form

$$\log w_i = a + b R_i + g X_i + u_i \qquad (1)$$

where w_i is the wage of the ith person, R_i is a vector of dummy variables indicating racial and ethnic categories, X_i is a vector of additional variables including schooling, age, and region, and u_i is a stochastic term that is uncorrelated with R and X. For each country Equation (1) will be estimated separately for men and women using the sample of 25-59 year-olds with positive earnings. There is no attempt to deal with the fact that those with positive earnings will be a non-random sample of the total

population. This is especially important for women in Brazil and South Africa, where only around 40% of women work for wages.

Four regressions are estimated for each sample. Regression 1 is a sample in which only dummies for race and ethnic categories are included, with white used as the omitted category in each case. Regression 2 adds dummy variables for schooling, using a very flexible specification for years of schooling based on the categories used in each survey. Regression 3 adds age and age squared to the regression. Age is used rather than a proxy for potential experience because a measure such as *Age-Schooling-7* is a very poor proxy for experience in Brazil and South Africa due to the frequency of low levels of schooling, the very high rates of grade repetition, and the low labor force participation rates for women. Regression 4 adds dummy variables for region of residence. While both the schooling categories and the region categories (like the racial classifications themselves) are not strictly comparable across countries, it is nonetheless instructive to compare how the impact of race varies across countries as different sets of variables are included in the wage regression.

Table 1 presents the estimated wage regressions for Brazil. The coefficients on preto (black) and pardo (brown) in Regression 1 indicate that white men have a wage advantage of around 0.6 log points over both of these groups, corresponding to a wage advantage of about 85%. Results for women are very similar. The R^2 for these regressions indicates that the racial categories alone explain less than 9% of the variance of log wages for both men and women in Brazil. Since the variance in log wages is one standard measure of wage inequality, this provides a convenient interpretation of the extent to which each set of variables can explain overall wage inequality.

Regression 2 in Table 1 shows the effect of adding a flexible function of schooling to the wage regression. The R^2 rises to 0.43 for both men and women, a four-fold increase over the explanatory power of the regression that includes only race dummies. The coefficients on the race dummies fall to around 0.25 for both racial groups for both men and women, implying that the racial gap is reduced by over half when schooling is included in the regressions. The effects of schooling on earnings are very high, as previously established in many studies of Brazilian labor markets. The effect of adding age and age squared, shown in Regression 3, is relatively modest, with very little effect on the coefficients for race or schooling.

Regression 4 includes dummy variables for region, using the five standard geographical regions in Brazil. The coefficients indicate that the northeast region, which is omitted, has significantly lower wages than the other four regions, with a gap of 0.34 log points compared to the southeast in the regression for men. Controlling for region has very little effect on the coefficient for preto, a somewhat surprising result given the fact that the black population is usually associated with the poorer northeast region. The reason for this lack of interaction between race and region is that the proportion of the

population that reports itself as black (preto) is almost identical in the northeast and the southeast, around 5%. The proportion identified as brown (pardo) is much larger in the northeast than in the southeast, however, which shows up here as a reduction in the white-brown wage gap once controls for region are included.

Summarizing the results for Brazil, the unadjusted racial wage gap between whites and blacks is about 0.6 log points for both men and women, falling to an adjusted wage gap of about .25 log points after adjusting for differences in the distribution of schooling. Less than 9% of wage inequality is explained by race alone, while 44% is explained by a combination of race and schooling.

Table 2 shows the same set of wage regressions for South Africa, with Regression 1 again showing the effect of racial categories alone on wages. The coefficients imply that white men have a wage advantage of more than 2.0 log points over both African and coloured men, a much larger gap than was estimated for Brazil. These coefficients imply that white men have almost eight times higher wages than non-white men, before controlling for differences in characteristics. The R^2 indicates that race alone explains about 15% of wage in equality for South African men. The unadjusted effects of race are smaller for women than for men, but are still much larger than the results estimated for Brazil.

Regression 2 in Table 2 shows the effect of controlling for schooling. The wage gap adjusting for schooling falls to about 1.5 log points for men, and about 1.1 log points for women. Additional controls for age and age squared, shown in Regression 3, drop the wage gap a bit more, although the gap is still very large, implying that white men earn 3.8 times more than African men after controlling for schooling and age. Additional controls for South Africa's nine provinces, shown in Regression 4, lower the wage gap to about 1.2 log points for men and about 0.9 log points for women. It is interesting to note that the overall explanatory power of Regression 4 is 0.25 for men and 0.22 for women, considerably lower than the corresponding regression for Brazil.

Turning to the United States, Table 3 shows the same set of wage regressions from the March 2000 CPS. The coefficients on black and Hispanic in Regression 1 indicate that white men have an unadjusted wage advantage of about 0.25 log points over black men and about 0.44 log points over Hispanic men. White women have an unadjusted wage advantage of about 0.08 log points over black women and about 0.30 log points over Hispanic women. The R^2 for Regression 1 indicates that differences in the means across racial and ethnic groups explain about 5% of wage inequality for mena and under 2% of wage inequality for women. Regression 2 shows that controls for schooling drop the wage advantage for white men to about 0.16 over black men and 0.21 for Hispanic men, and raise the R^2 to 0.16. For women, controls for schooling lower the white advantage over blacks falls to a point estimate of .01, a difference that is not statistically significant. Regressions 3 and 4 show that additional controls for age and region have almost no effect on the white-black wage gap, but reduce

the white-Hispanic wage gap. After all these controls the white-black wage gap and white-Hispanic wage gap are both around 15% for men. The white-Hispanic wage gap for women is about 8%, while the white-black wage gap for women is effectively zero. The total explanatory power of Regression 4 is under 20% for men and under 15% for women, lower than the R^2 for Brazil and South Africa.

Figure 4 provides a graphical summary of the estimated wage advantage of whites relative to each of the non-white groups for both men and women in each country. Note that the three panels have different scales on the vertical axis, reflecting the large differences in the magnitudes of the estimated racial gaps in earnings. The unadjusted black-white wage gap for men in South Africa is more than three times as large as the black-white wage gap in Brazil, and eight times greater than the black-white wage gap in the United States. After controlling for years of schooling, the South African black-white wage gap for men is five times greater than in Brazil, and eight times greater than in the United States. It is instructive to convert the log point differentials into exponentiated percentage differentials. Taking exponentials and expressing the white wage as a multiple of the black wage using the results in Figure 4, the unadjusted white wage would be 7.4 times the black wage in South Africa, 1.8 times in Brazil, and 1.3 times in the United States. After contolling for schooling and region, the white wage would be 3.4 times the black wage in South Africa, 1.3 times in Brazil, and 1.16 times in the United States.

Figure 4 provides a clear graphical picture of the fact that controls for schooling account for a much larger portion of the black-white wage gap in Brazil than in South Africa. Black-white differences in education appear to play a more important role in explaining the overall black-white gap in earnings in Brazil, while in South Africa the gap appears to be more related to outcomes in the labor market. The following sections explore the role of schooling in more detail, looking at the impact of race on the children's schooling.

Race, Parental Schooling, and Children's Schooling

The above results demonstrate the important role that schooling plays in explaining the overall impact of race on earnings in Brazil, South Africa, and the United States. In each of the three countries there would be a lower racial gap in adult earnings if there were not a racial gap in schooling. The role of schooling differs across countries, however, playing a relatively small role in the racial gap in earnings in the United States and playing a very large role in Brazil. This section of the paper explores the intergenerational component of the racial gap in schooling. Just as the racial gap in earnings can be thought of as an unadjusted gap and a gap that persists after controls for schooling and other characteristics, the gap in schooling can be thought of as an unadjusted schooling gap and a gap that persists after controls for the characteristics of children such as the schooling of their parents and the geographical regions they grow up in. Following the spirit of the analysis above, this section presents regression estimates in which the schooling attainment of children age 10-15 is used as the dependent

variable. As we will see, in Brazil and South Africa substantial differences in schooling attainment across racial groups have already begun to appear by these ages. Since most children these ages are still living with at least one parent at these ages, it is possible to control for parental education in looking at schooling differences across racial groups. Analysis of the schooling of children living at home is much less interesting in the United States, where racial differences in schooling are dominated by the experience of post-secondary schooling. The analysis in this section therefore looks only at Brazil and South Africa, where high rates of grade repetition make the analysis of schooling attainment at ages 10-15 very relevant to the schooling gaps that will be observed among adults.

The empirical strategy is similar to the analysis of the racial gap in earnings above. A series of regressions are estimated using different sets of independent variables. The dependent variable is the number of years of schooling per year of age since age seven. For a student who began school at age 7 and advanced one grade per year, this measure would equal 1.0 at every age. The mean of this "schooling per year" variable is relatively constant across ages in a given population group. The effects of independent variables have a straightforward interpretation. The white-black differential, for example, can be interpreted as a differential rate of school progress, eliminating the need to interact race with age. Results using years of completed schooling lead to similar conclusions, but require analysis by separate age groups or extensive age interactions to produce meaningful results. The first regression includes only dummies for racial groups, as above. The second regression adds dummy variables for mother's education. The third regression adds dummy variables for father's education. The fourth regression adds dummy variables for region and rural-urban location. Regressions are estimated for girls only, for boys only, and for the combined sample of boys and girls.

Table 5 presents regression results for Brazil, using the sample of children ages 10 to 15 in the 1997 PNAD. Looking at the top panel, which combines boys and girls, the coefficient on preto implies that white children move through school about 0.22 grades per year of age faster than black children. This implies that by age 12 (5 years after starting school), white students would be 1.1 grades ahead of black students. The coefficient on female indicates that girls move through school faster than boys. Looking at the panels giving the separate estimates for boys and girls, the white advantage in school progress is slightly higher for boys than girls.

Regression 2 in Table 5 includes controls for mother's schooling (the coefficients for mother's schooling are not shown). The impact of race declines when mother's schooling is included in the regression, with the white advantage now about 0.15 grades per year. This is still a large effect, implying a 0.75 grade advantage of whites over blacks at age 12 and a 1.5 grade advantage at age 17. Controlling for both mother's and father's schooling, shown in Regression 3, the white-black advantage falls slightly, to 0.13 grades per year. Regional controls, shown in Regression 4, have little

effect on the white-black differential, but lower than he white-brown differential to 0.05 grades per year.

Table 6 shows the same set of regressions for South Africa. The unadjusted white-black differential, shown in Regression 1, is 0.18 grades per year, fairly similar to the 0.2 difference estimated for Brazil. There is a much smaller unadjusted white-colored differential, about 0.07 grades per year. As in Brazil, the coefficient on female indicates that girls move through school faster than boys. Regression 2 shows that there is a very large effect of adding mother's schooling to the regression, with the white-black schooling gap dropping to 0.04 grades per year. This implies a gap of one-fifth of a grade at age 12, about 1/3 as large as the white-black gap from Regression 2 for Brazil. Regression 3 shows that the white-black schooling gap effectively disappears when father's schooling is also included in the regression. The point estimate of 0.009 is not statistically significant. Adding regional controls lowers the gap even further. This is especially interesting since in Brazil there is still a significant gap after controlling for both parents' schooling and region. Looking at the separate estimates for boys and girls, there is small white advantage for boys in Regression 4, though it is not statistically significant. The point estimate for girls actually implies a black advantage over whites, although this coefficient is not statistically significant. It is important to recall the caveat that none of these results account for potentially large differences in school quality across racial groups, a factor that is likely to be very important in both South Africa and Brazil. The fact that there is no gap in grade attainment in South Africa between white and black children at age 15, after controlling for parental schooling, should clearly not be interpreted as indicating equality in schooling.

Figure 5 provides a graphical summary of the estimated racial gaps from the regressions that are estimated separately for boys and girls. The most striking feature of the graph is the fact that while the unadjusted white-black gap for boys is almost identical in Brazil and South Africa, the gap after adjusting for parental schooling and region is much smaller in South Africa. In the case of girls, the unadjusted gap is smaller in South Africa than in Brazil, and the gap after adjusting for parental schooling and region disappears completely in South Africa, while remaining at over one-tenth of a grade per year of age in Brazil. The results imply that the overall penalty for being black in terms of schooling achieved by age 15 is relatively similar in Brazil and South Africa, but the penalty after adjusting for parental schooling is considerably larger in Brazil. These results for educational attainment thus differ from the results for earnings, where both the unadjusted and adjusted racial gap was much greater in South Africa.

Conclusions

Analysis of large household surveys from Brazil, South Africa, and the United States indicate significant racial gaps in wages in all three countries, but with large differences in the magnitude of the

gaps across countries. South Africa has by far the largest racial gap in earnings, with white men reporting earnings more than seven times the earnings of African men. Differentials in schooling attainment explain a substantial part of the schooling gap in each country. Schooling plays the most important role in Brazil, where the black-white wage gap falls by more than 50% after controlling for differences in schooling. After controlling for a very flexible specification for years of schooling, the adjusted wage gap is about 240% in South Africa, 30% in Brazil, and 16% in the United States.

Although South Africa has a much larger impact of race on earnings than either Brazil or the United States, with and without controls for schooling, analysis of the determinants of children's schooling indicates some surprising patterns. Brazil and South Africa have almost identical unadjusted racial gaps in the schooling of 10-15 year-olds. Controls for parental education lower these gaps in both Brazil and South Africa, but the impact of parental education on the racial gap in schooling is much greater in South Africa. After controlling for mother's and father's schooling there is no gap in the schooling attainment of white and black girls, and only a small white advantage for boys. The results suggest that the impact of race appears to be different in the labor market than in the production of human capital across countries. South Africa has a very large penalty for being non-white in the labor market in comparison to Brazil and the United States. In the schooling system, however, there is a smaller penalty for being non-white in South Africa than in Brazil. While these estimates do not account for potentially large differences in school quality across racial groups, they nonetheless suggest that the policy challenges related to racial inequality facing Brazil and South Africa are somewhat different. Brazil's racial gap in earnings is heavily influenced by racial gaps in the production of human capital. South Africa's much larger racial gap in earnings appears to be much more of a phenomenon of the labor market.

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Table 1. Population composition, Brazil 1999 PNAD, South Africa 1997 OHS, United States 2000 CPS

Brazil		South Africa		United States	
Indigena	0.2%	Indian	2.9%	Native	1.1%
Amarela	0.5%	White	9.0%	Asian	3.6%
Preta	5.4%	Coloured	14.0%	Black	9.0%
Parda	39.9%	African	74.1%	Hispanic	16.7%
Branca	54.0%			White	69.6%

Table 2: OLS regressions, log of hourly earnings, Brazil PNAD 1999, men and women aged 25-59

	Regression 1		Regression 2		Regression 3		Regression 4	
Variable	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Constant	1.15 (0.01)	0.98 (0.01)	0.15 (0.01)	0.03 (0.02)	-1.12 (0.20)	-0.99 (0.25)	-1.40 (0.19)	-1.35 (0.24)
Race								
Preto	-0.58 (0.02)	-0.63 (0.03)	-0.25 (0.02)	-0.25 (0.02)	-0.25 (0.02)	-0.25 (0.02)	-0.26 (0.02)	-0.24 (0.02)
Pardo	-0.62 (0.01)	-0.59 (0.01)	-0.26 (0.01)	-0.28 (0.01)	-0.25 (0.01)	-0.27 (0.01)	-0.18 (0.01)	-0.16 (0.01)
Schooling								
1 year			0.17 (0.03)	0.10 (0.04)	0.18 (0.03)	0.12 (0.04)	0.11 (0.03)	0.09 (0.04)
2 years			0.26 (0.02)	0.15 (0.03)	0.27 (0.02)	0.16 (0.03)	0.16 (0.02)	0.09 (0.03)
3 years			0.38 (0.02)	0.28 (0.03)	0.38 (0.02)	0.29 (0.03)	0.23 (0.02)	0.20 (0.03)
4 years			0.59 (0.02)	0.38 (0.02)	0.59 (0.02)	0.40 (0.02)	0.38 (0.02)	0.26 (0.02)
5 years			0.64 (0.02)	0.41 (0.03)	0.67 (0.02)	0.45 (0.03)	0.45 (0.02)	0.33 (0.03)
6 years			0.74 (0.02)	0.46 (0.03)	0.78 (0.02)	0.51 (0.03)	0.53 (0.02)	0.37 (0.03)
7 years			0.82 (0.02)	0.54 (0.03)	0.85 (0.02)	0.60 (0.03)	0.59 (0.02)	0.46 (0.03)
8 years			0.96 (0.02)	0.69 (0.02)	0.99 (0.02)	0.73 (0.02)	0.71 (0.02)	0.57 (0.02)
9 years			1.05 (0.03)	0.71 (0.04)	1.10 (0.03)	0.77 (0.04)	0.83 (0.03)	0.63 (0.04)
10 years			1.13 (0.03)	0.85 (0.03)	1.17 (0.03)	0.90 (0.03)	0.90 (0.03)	0.75 (0.03)
11 years			1.37 (0.02)	1.12 (0.02)	1.40 (0.02)	1.17 (0.02)	1.13 (0.02)	1.06 (0.02)
12 years			1.67 (0.04)	1.32 (0.04)	1.70 (0.04)	1.37 (0.04)	1.42 (0.04)	1.24 (0.04)
13 years			1.88 (0.04)	1.49 (0.05)	1.90 (0.04)	1.53 (0.05)	1.62 (0.04)	1.39 (0.05)
14 years			1.95 (0.04)	1.74 (0.04)	1.96 (0.04)	1.79 (0.04)	1.69 (0.04)	1.63 (0.04)
15+ years			2.22 (0.02)	1.98 (0.02)	2.23 (0.02)	2.02 (0.02)	1.94 (0.02)	1.87 (0.02)
Age					0.05 (0.01)	0.03 (0.01)	0.05 (0.01)	0.03 (0.01)
Age squared					0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Urban							0.39 (0.01)	0.21 (0.02)
Region								
North							0.13 (0.02)	0.22 (0.02)
Central West							0.27 (0.02)	0.31 (0.02)
South							0.22 (0.01)	0.27 (0.02)
Southeast							0.34 (0.01)	0.42 (0.01)
N	38293	25276	38296	25279	38296	25279	38296	25279
R-squared	0.089	0.086	0.433	0.428	0.4413	0.436	0.4816	0.468

* Standard errors in parentheses; omitted categories: White, No schooling, Rural, Northeast

Table 3: OLS regressions, log of hourly earnings, South Africa OHS 1997, men and women aged 25-59

	Regression 1		Regression 2		Regression 3		Regression 4	
Variable	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Constant	4.05 (0.05)	3.45 (0.06)	2.80 (0.07)	2.15 (0.09)	0.31 (0.33)	0.44 (0.38)	0.29 (0.34)	0.28 (0.39)
Race								
African	-2.05 (0.05)	-1.73 (0.07)	-1.44 (0.06)	-1.06 (0.07)	-1.33 (0.06)	-1.02 (0.07)	-1.22 (0.06)	-0.90 (0.07)
Coloured	-2.11 (0.06)	-1.85 (0.08)	-1.49 (0.07)	-1.13 (0.08)	-1.36 (0.07)	-1.04 (0.08)	-1.20 (0.07)	-0.87 (0.09)
Schooling								
1 year			0.32 (0.29)	-0.44 (0.32)	0.38 (0.29)	-0.37 (0.32)	0.30 (0.28)	-0.25 (0.31)
2 years			0.27 (0.19)	0.24 (0.27)	0.31 (0.18)	0.28 (0.27)	0.38 (0.18)	0.23 (0.26)
3 years			0.07 (0.10)	0.20 (0.13)	0.13 (0.10)	0.20 (0.13)	0.13 (0.10)	0.19 (0.13)
4 years			0.35 (0.09)	0.10 (0.11)	0.39 (0.09)	0.13 (0.11)	0.35 (0.09)	0.12 (0.11)
5 years			0.24 (0.09)	0.12 (0.11)	0.33 (0.09)	0.16 (0.11)	0.30 (0.09)	0.13 (0.11)
6 years			0.41 (0.08)	0.22 (0.09)	0.49 (0.08)	0.28 (0.09)	0.41 (0.08)	0.23 (0.09)
7 years			0.55 (0.07)	0.35 (0.08)	0.65 (0.07)	0.40 (0.08)	0.54 (0.07)	0.32 (0.08)
8 years			0.64 (0.07)	0.56 (0.08)	0.70 (0.07)	0.58 (0.08)	0.55 (0.07)	0.47 (0.08)
9 years			0.75 (0.08)	0.52 (0.10)	0.90 (0.08)	0.64 (0.10)	0.73 (0.08)	0.52 (0.10)
10 years			0.92 (0.07)	0.88 (0.08)	1.07 (0.07)	0.97 (0.08)	0.88 (0.07)	0.81 (0.08)
11 years			0.90 (0.09)	0.74 (0.10)	1.11 (0.09)	0.89 (0.10)	0.88 (0.09)	0.71 (0.10)
12 years			1.32 (0.06)	1.39 (0.07)	1.54 (0.06)	1.55 (0.07)	1.35 (0.06)	1.42 (0.07)
15+ years			1.93 (0.11)	2.16 (0.13)	2.07 (0.11)	2.28 (0.13)	1.91 (0.11)	2.15 (0.13)
Age					0.09 (0.02)	0.06 (0.02)	0.08 (0.02)	0.06 (0.02)
Age squared					0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Urban area							0.34 (0.04)	0.23 (0.05)
Region								
Eastern Cape							-0.09 (0.08)	-0.10 (0.09)
Northern Cape							-0.16 (0.08)	-0.26 (0.09)
Free State							-0.33 (0.08)	-0.42 (0.09)
Kwazulu-Natal							0.23 (0.07)	0.42 (0.09)
North-West							0.06 (0.08)	0.11 (0.10)
Gauteng							0.31 (0.07)	0.29 (0.08)
Mpumalanga							-0.03 (0.08)	-0.13 (0.10)
Northern Prov.							0.18 (0.09)	0.05 (0.10)
N	9181	6702	9181	6702	9181	6702	9181	6702
R-Squared	0.156	0.096	0.215	0.186	0.231	0.194	0.250	0.217

* Standard errors in parentheses; omitted categories: White, No schooling, Rural, Western Cape

Table 4: OLS regressions, log of hourly earnings, United States CPS 2000, men and women aged 25-59

	Regression 1		Regression 2		Regression 3		Regression 4	
Variable	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Constant	2.78 (0.01)	2.41 (0.01)	2.27 (0.02)	1.81 (0.03)	0.60 (0.09)	0.66 (0.10)	0.65 (0.09)	0.76 (0.10)
Race								
Black	-0.25 (0.02)	-0.08 (0.02)	-0.16 (0.02)	-0.01 (0.02)	-0.16 (0.02)	0.00 (0.02)	-0.15 (0.02)	0.01 (0.02)
Hispanic	-0.44 (0.01)	-0.30 (0.02)	-0.21 (0.01)	-0.11 (0.02)	-0.16 (0.01)	-0.08 (0.02)	-0.15 (0.01)	-0.08 (0.02)
Schooling								
Grade 9			-0.01 (0.04)	0.03 (0.05)	0.03 (0.04)	0.05 (0.05)	0.04 (0.04)	0.05 (0.05)
Grade 10			0.04 (0.04)	0.02 (0.05)	0.08 (0.04)	0.04 (0.05)	0.08 (0.04)	0.04 (0.05)
Grade 11			0.09 (0.04)	0.09 (0.05)	0.13 (0.04)	0.11 (0.05)	0.13 (0.04)	0.12 (0.05)
Grade 12, no diploma			0.19 (0.05)	0.23 (0.06)	0.24 (0.05)	0.26 (0.06)	0.24 (0.05)	0.26 (0.06)
High school diploma			0.29 (0.02)	0.37 (0.03)	0.32 (0.02)	0.40 (0.03)	0.32 (0.02)	0.39 (0.03)
Some college			0.44 (0.02)	0.53 (0.03)	0.47 (0.02)	0.56 (0.03)	0.47 (0.02)	0.56 (0.03)
Associate degree			0.49 (0.03)	0.61 (0.03)	0.51 (0.03)	0.64 (0.03)	0.51 (0.03)	0.63 (0.03)
Bachelor's degree			0.73 (0.02)	0.82 (0.03)	0.76 (0.02)	0.86 (0.03)	0.76 (0.02)	0.86 (0.03)
Graduate degree			0.99 (0.03)	1.10 (0.03)	0.98 (0.03)	1.11 (0.03)	0.97 (0.03)	1.11 (0.03)
Experience								
Age					0.07 (0.00)	0.05 (0.00)	0.07 (0.00)	0.05 (0.00)
Age squared					0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Region								
Midwest							-0.04 (0.01)	-0.11 (0.01)
South							-0.07 (0.01)	-0.13 (0.01)
West							-0.05 (0.01)	-0.09 (0.01)
N	24592	22225	24592	22225	24592	22225	24592	22225
R-squared	0.050	0.018	0.164	0.132	0.193	0.144	0.194	0.148

* Standard errors in parentheses; omitted categories: White, 0-8 years schooling, Rural, Northeast

Table 5. OLS Regressions, Years of schooling per year of age since age 7 for children ages 10-15, Brazil 1999 PNAD

Years of schooling per year of age	Regression 1		Regression 2		Regression 3		Regression 4	
All children								
Constant	0.813	0.004	0.544	0.005	0.393	0.006	0.285	0.006
Black	**-0.221**	0.007	**-0.151**	0.006	**-0.133**	0.006	**-0.115**	0.006
Parda	**-0.187**	0.003	**-0.119**	0.003	**-0.102**	0.003	**-0.051**	0.003
Mother's schooling dummies	no		yes		yes		yes	
Father's schooling dummies	no		no		yes		yes	
Regional dummies	no		no		no		yes	
Urban	no		no		no		yes	
Female	**0.072**	0.003	**0.070**	0.003	**0.083**	0.003	**0.082**	0.003
Age 11	-0.006	0.005	-0.007	0.005	-0.020	0.004	-0.019	0.004
Age 12	-0.015	0.005	-0.010	0.005	-0.030	0.004	-0.028	0.004
Age 13	-0.024	0.005	-0.014	0.005	-0.046	0.004	-0.043	0.004
Age 14	-0.031	0.005	-0.021	0.005	-0.060	0.004	-0.056	0.004
Age 15	-0.041	0.005	-0.030	0.005	-0.074	0.005	-0.071	0.004
N	40683		40683		40683		40683	
R-squared	0.108		0.271		0.343		0.397	
Boys only								
Constant	0.820	0.006	0.543	0.007	0.377	0.008	0.271	0.008
Black	**-0.229**	0.010	**-0.154**	0.009	**-0.114**	0.008	**-0.096**	0.008
Parda	**-0.203**	0.004	**-0.131**	0.004	**-0.097**	0.004	**-0.047**	0.004
Mother's schooling dummies	no		yes		yes		yes	
Father's schooling dummies	no		no		yes		yes	
Province dummies	no		no		no		yes	
Urban	no		no		no		yes	
Age 11	-0.008	0.007	-0.010	0.007	-0.041	0.006	-0.038	0.006
Age 12	-0.012	0.007	-0.009	0.007	-0.059	0.006	-0.054	0.006
Age 13	-0.020	0.007	-0.010	0.007	-0.085	0.006	-0.079	0.006
Age 14	-0.036	0.007	-0.024	0.007	-0.117	0.006	-0.110	0.006
Age 15	-0.042	0.007	-0.032	0.007	-0.133	0.006	-0.125	0.006
N	20673		20673		20673		20673	
R-squared	0.103		0.266		0.411		0.459	
Girls only								
Constant	0.876	0.005	0.616	0.007	0.524	0.009	0.414	0.009
Black	**-0.214**	0.010	**-0.148**	0.009	**-0.144**	0.009	**-0.129**	0.009
Parda	**-0.171**	0.004	**-0.106**	0.004	**-0.101**	0.004	**-0.052**	0.004
Mother's schooling dummies	no		yes		yes		yes	
Father's schooling dummies	no		no		yes		yes	
Province dummies	no		no		no		yes	
Urban	no		no		no		yes	
Age 11	-0.004	0.007	-0.002	0.006	-0.004	0.006	-0.004	0.006
Age 12	-0.018	0.007	-0.012	0.006	-0.013	0.006	-0.013	0.006
Age 13	-0.027	0.007	-0.018	0.006	-0.022	0.006	-0.022	0.006
Age 14	-0.026	0.007	-0.019	0.006	-0.023	0.006	-0.021	0.006
Age 15	-0.040	0.007	-0.028	0.006	-0.035	0.006	-0.035	0.006
N	20010		20010		20010		20010	
R-squared	0.088		0.255		0.271		0.33	

Notes: Standard error in second column. Omitted categories: White, age 10.

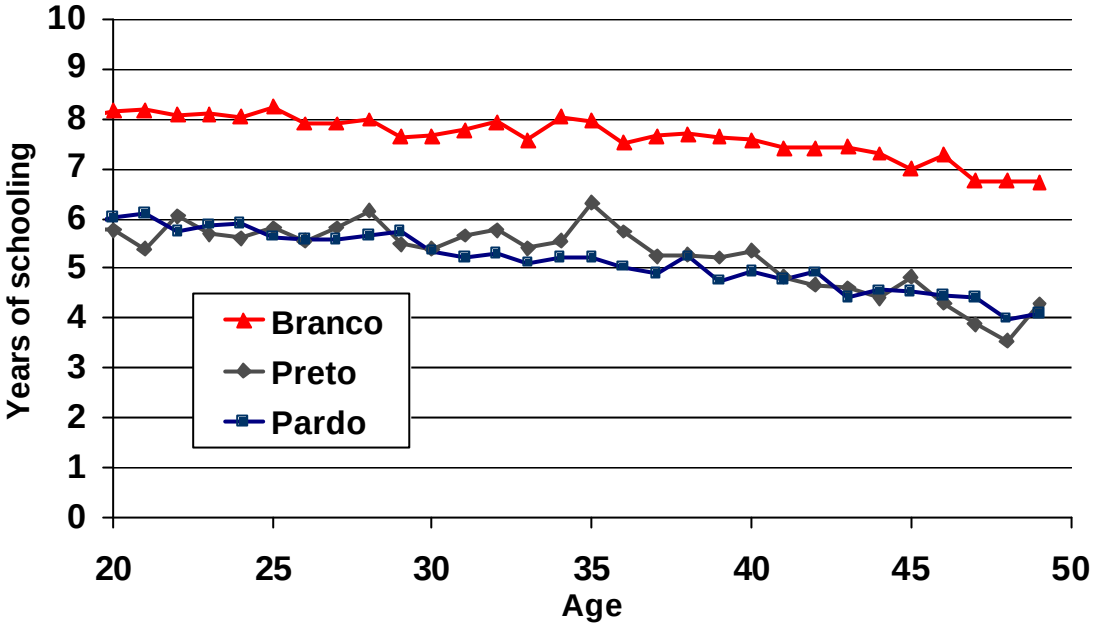
Table 6. OLS Regressions, Years of schooling per year of age since age 7 for children ages 10-15, South Africa, 1997 OHS

Years of schooling per year of age	Regression 1		Regression 2		Regression 3		Regression 4	
All children								
Constant	1.161	0.016	0.915	0.019	0.878	0.020	0.851	0.024
African	**-0.187**	0.014	**-0.037**	0.016	**-0.009**	0.017	**-0.004**	0.017
Coloured	**-0.071**	0.017	**0.052**	0.018	**0.066**	0.019	**0.077**	0.020
Mother's schooling dummies	no		yes		yes		yes	
Father's schooling dummies	no		no		yes		yes	
Province dummies	no		no		no		yes	
Urban	no		no		no		0.048	0.009
Female	**0.078**	0.007	**0.077**	0.007	**0.078**	0.007	**0.077**	0.007
Age 11	-0.088	0.013	-0.086	0.013	-0.087	0.013	-0.088	0.012
Age 12	-0.112	0.012	-0.106	0.012	-0.106	0.012	-0.108	0.012
Age 13	-0.129	0.013	-0.119	0.012	-0.118	0.012	-0.121	0.012
Age 14	-0.151	0.013	-0.138	0.012	-0.138	0.012	-0.139	0.012
Age 15	-0.173	0.013	-0.159	0.012	-0.159	0.012	-0.159	0.012
n	12965		12965		12965		12965	
R-squared	0.044		0.089		0.094		0.110	
Boys only								
Constant	1.202	0.024	0.948	0.028	0.908	0.029	0.880	0.035
African	**-0.239**	0.021	**-0.082**	0.023	**-0.052**	0.025	**-0.035**	0.025
Coloured	**-0.093**	0.025	**0.041**	0.027	**0.053**	0.028	**0.062**	0.029
Mother's schooling dummies	no		yes		yes		yes	
Father's schooling dummies	no		no		yes		yes	
Province dummies	no		no		no		yes	
Urban	no		no		no		0.061	0.014
Age 11	-0.082	0.019	-0.078	0.018	-0.079	0.018	-0.081	0.018
Age 12	-0.109	0.018	-0.100	0.018	-0.099	0.018	-0.101	0.017
Age 13	-0.122	0.018	-0.108	0.018	-0.108	0.018	-0.117	0.018
Age 14	-0.150	0.018	-0.136	0.018	-0.135	0.018	-0.137	0.018
Age 15	-0.173	0.018	-0.155	0.018	-0.156	0.018	-0.158	0.018
n	6429		6429		6429		6429	
R-squared	0.043		0.088		0.095		0.116	
Girls only								
Constant	1.200	0.022	0.960	0.026	0.926	0.027	0.900	0.033
African	**-0.137**	0.019	**0.007**	0.021	**0.035**	0.023	**0.027**	0.024
Coloured	**-0.051**	0.023	**0.064**	0.025	**0.079**	0.026	**0.091**	0.028
Mother's schooling dummies	no		yes		yes		yes	
Father's schooling dummies	no		no		yes		yes	
Province dummies	no		no		no		yes	
Urban	no		no		no		0.034	0.013
Age 11	-0.096	0.018	-0.097	0.017	-0.097	0.017	-0.097	0.017
Age 12	-0.116	0.017	-0.115	0.017	-0.114	0.017	-0.114	0.017
Age 13	-0.138	0.017	-0.133	0.017	-0.132	0.017	-0.129	0.017
Age 14	-0.154	0.017	-0.143	0.017	-0.143	0.017	-0.143	0.017
Age 15	-0.176	0.017	-0.167	0.017	-0.164	0.017	-0.162	0.017
n	6536		6536		6536		6536	
R-squared	0.031		0.080		0.083		0.098	

Notes: Standard error in second column. Omitted categories: White, age 10.

Figure 1. Mean years of schooling by age and race, Brazil 1999

Males



Females

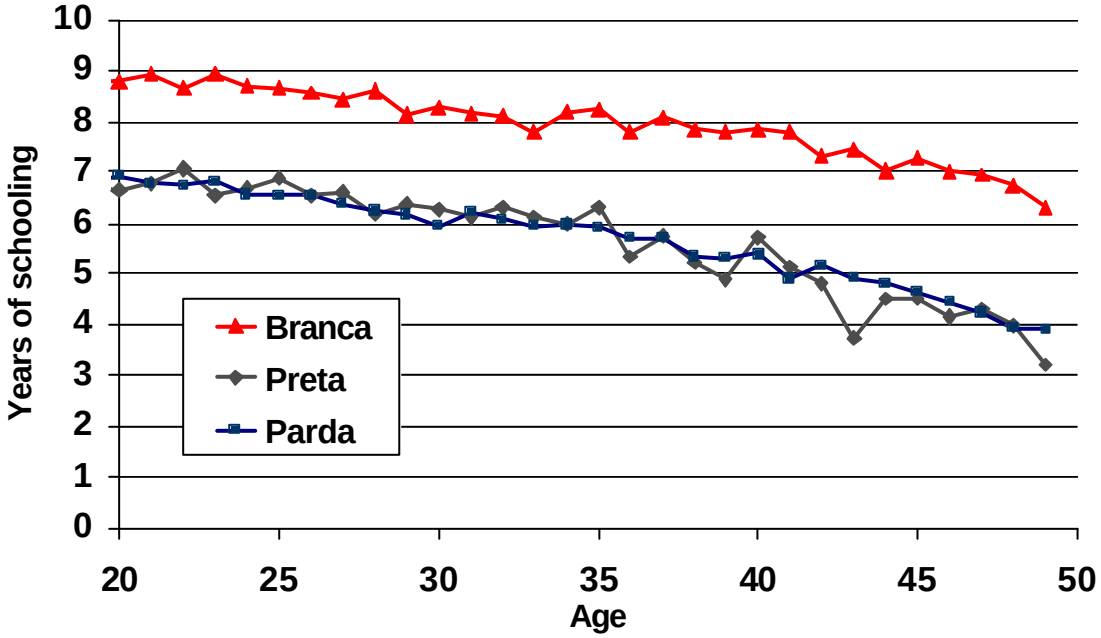
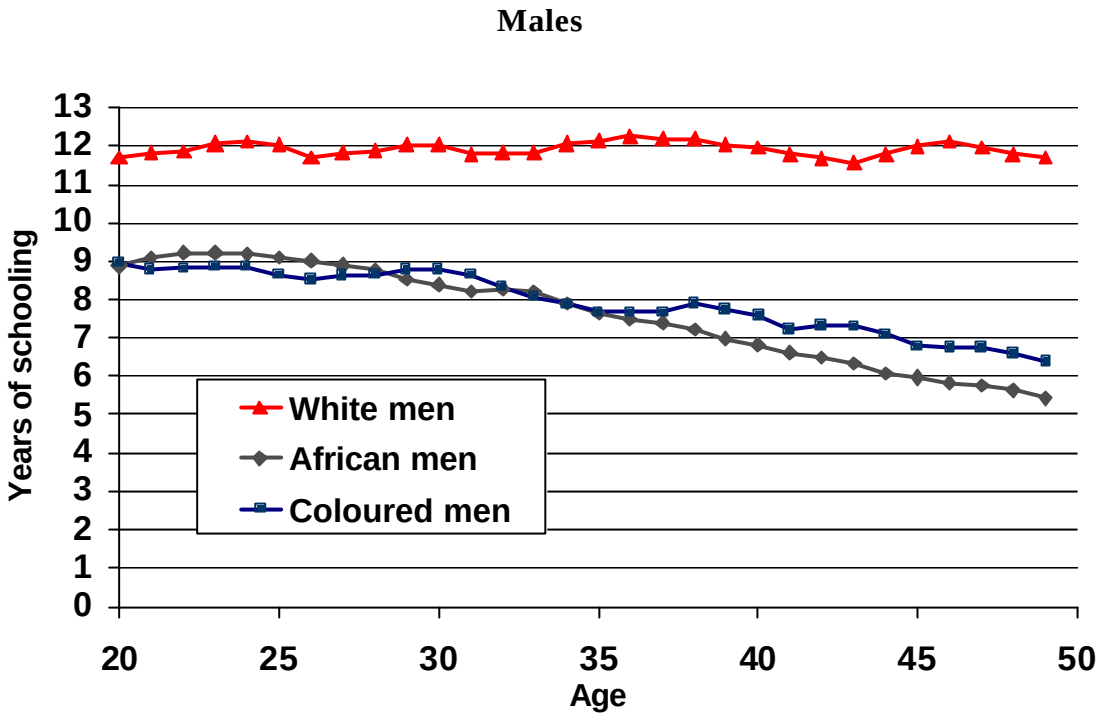


Figure 2. Mean years of schooling by age and race, South Africa 1997



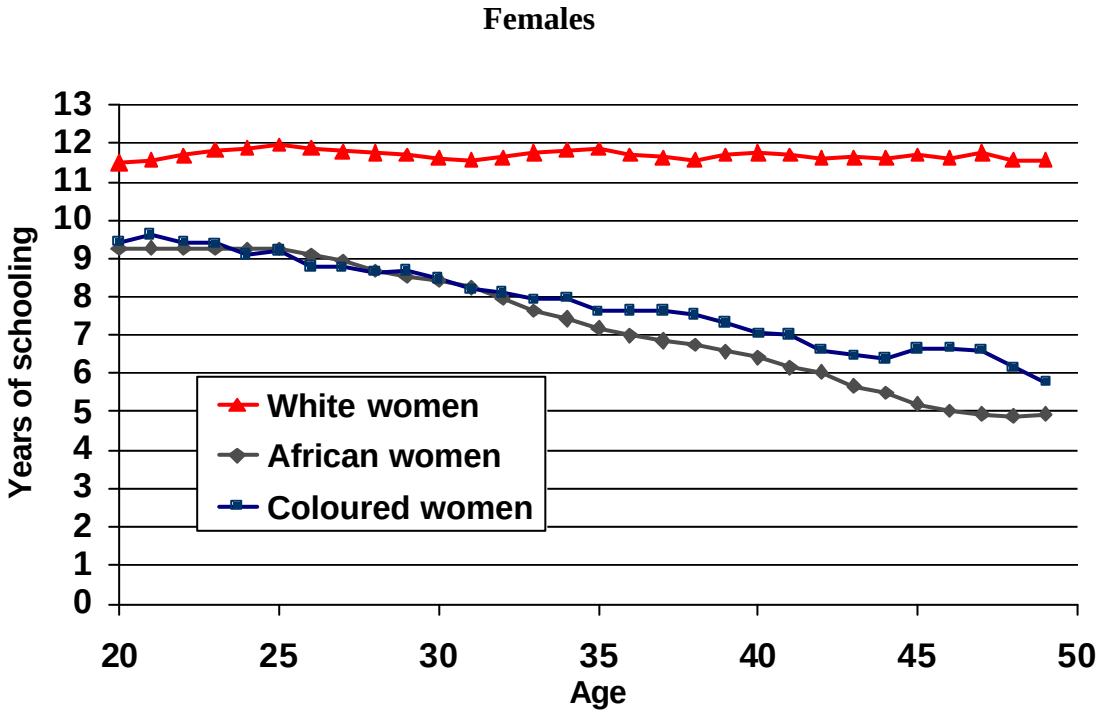


Figure 3. Mean years of schooling by age and race, United States 2000

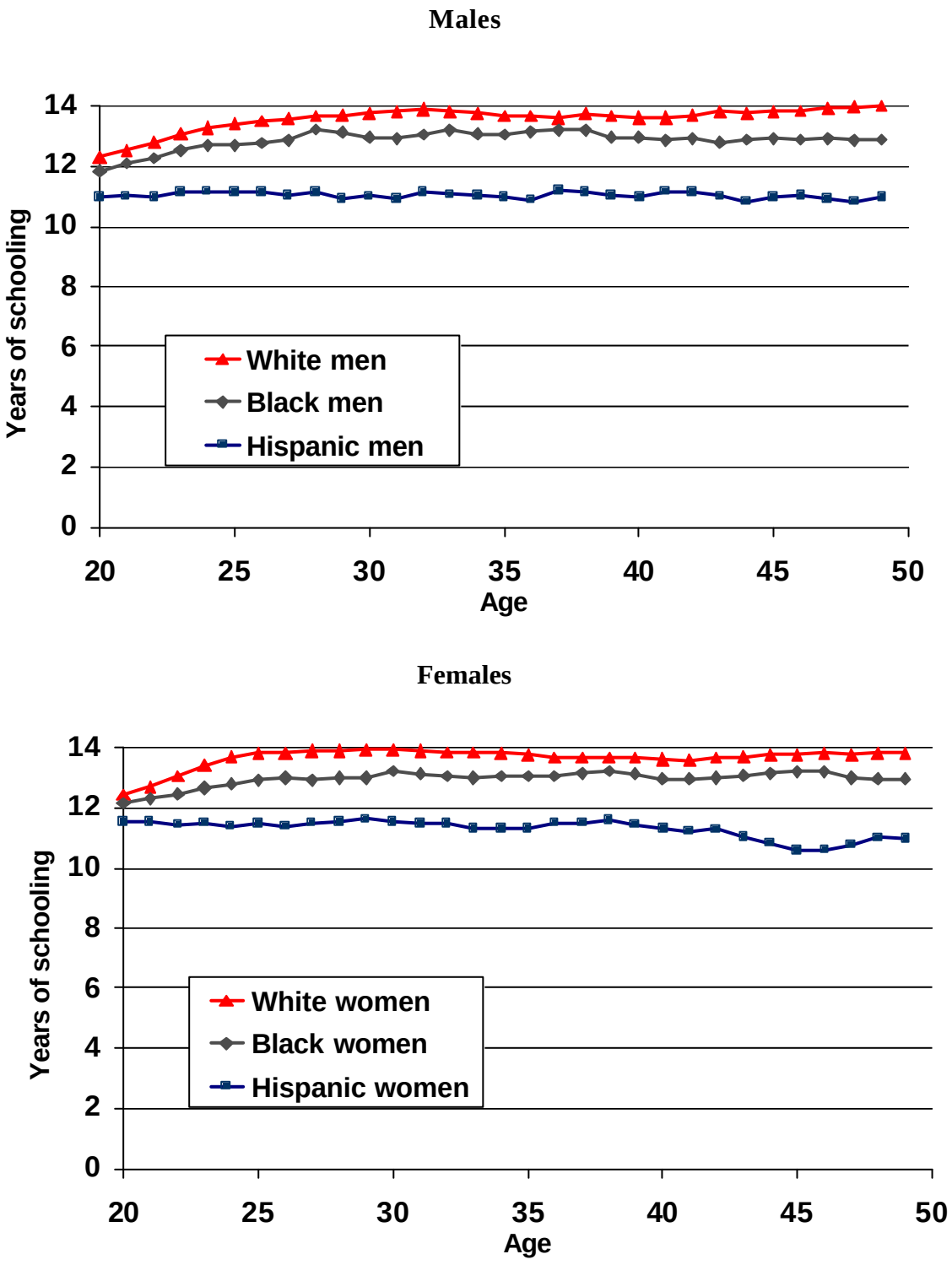
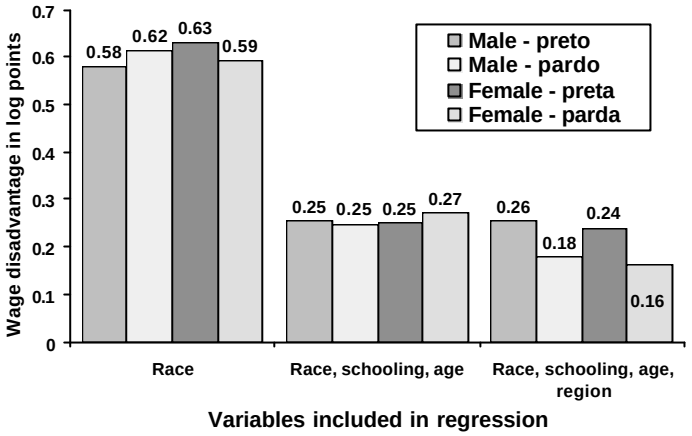
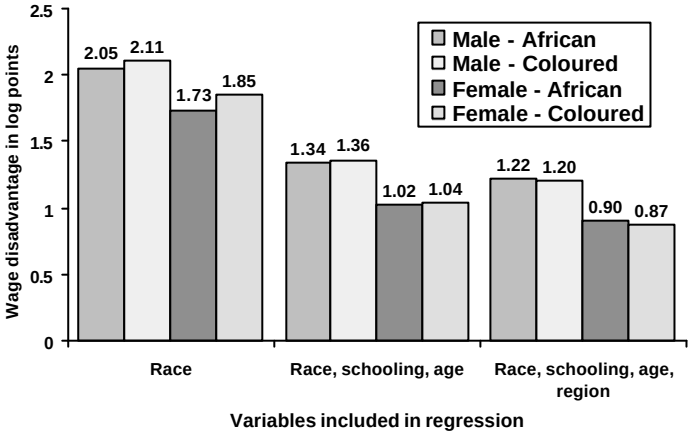


Figure 4. Wage advantage of whites based on wage regressions with and without controls for human capital and region, males and females age 25-59, Brazil, South Africa, and United States (based on regressions in Tables 2, 3, and 4)

Brazil, 1999 PNAD



South Africa, 1997 OHS



United States, 2000 CPS

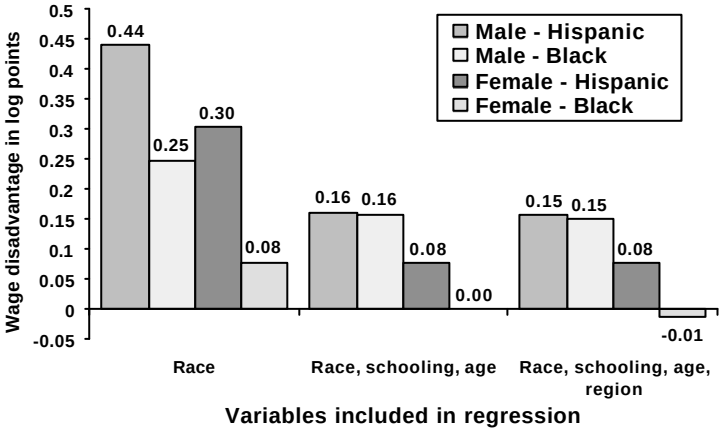


Figure 5. Schooling gap of blacks relative to whites, years of schooling per year of age since age 7, males and females age 10-15, Brazil and South Africa