Chapter 7
Racial Achievement Gaps in Another America: Discussing Schooling Outcomes and Affirmative Action in Brazil

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Introduction

A negative association between African ancestry and measures of socioeconomic success in regions colonized by Europeans can be considered an empirical regularity across the social sciences. In the USA, Brazil, and South Africa, for example, the intense trade of African slaves by English and Portuguese colonizers and the Dutch displacement of indigenous populations made the color of one's skin an indicator of European ancestry and made it play a key role in social stratification. Most studies document the presence of this historically rooted stratification and uncover racial differences in a variety of contexts, even in the presence of sharp differences in patterns of economic development, enforcement of civil rights, and institutional arrangements regarding racial segregation.[1]

The case of Brazil is particularly outstanding due to somewhat contradictory observations. On the one hand, widespread interracial marriages and desegregation in housing markets have helped spread the view of a Brazilian "racial democracy." Approximately one in every four heterosexual couples is the result of the union between White and Black individuals, whereas the geographic dispersion of population in major urban areas indicates that from one-fifth to one-third of the neighbors

[1] See Alexander et al. (2001) for discussions regarding South Africa, the USA, and Brazil. See also Herring et al. (2004) and Telles (2004) on the North American and Brazilian experiences.

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of a White Brazilian are Black.[2] As pointed by Reichmann (1999), these indicators led foreign observers to become fascinated with a "haven of racial reconciliation and affinity." On the other hand, and in sharp contrast with the image of tolerance portrayed by such mix, there are stark and persistent inequalities in living standards across skin color groups. In fact, a recent Human Development Report (United Nations 2005) states that skin color difference in economic achievement is one of the main social challenges facing Brazil. The report suggests that antidiscrimination (color-sighted) policies should be a central component of any poverty reduction program implemented in the country.

In this chapter, we explore the recent evidence of racial disparities in socioeconomic outcomes in Brazil. We then trace these differences to income-generating capabilities materialized in an uneven accumulation of human capital (formal education in particular) by Black and White adult Brazilians. We also explore unique and novel data on school transitions and proficiency for the case of the Brazilian southeastern state of Sao Paulo in order to establish general stylized facts in education trends among younger cohorts. The discussion that follows is centered on the assessment of color-blind and color-sighted policies that suggest a closing (but not the elimination) of racial gaps in both the quantity and the quality of education.

Data

We base the analysis in this chapter on two national sources of aggregate data on households and individuals, one source of regional longitudinal information on students built from administrative records, and two national sources of information on high school graduates and college students. National data aggregates are computed from public microdata records of the Brazilian Population Census of 2000 and the Brazilian yearly Household Surveys from 1989 to 2009, both collected and organized by the Brazilian Census Bureau (Instituto Brasileiro de Geografia e Estatistica, IBGE). Regional data are sourced from Sao Paulo's school system and covers the years 2007 to 2011. Sao Paulo is the most populous, richest, and most heterogeneous of all 26 Brazilian states. In Sao Paulo, the School Authority (Secretaria Estadual de Educacao, SEE-SP) directly manages over 5,000 schools, employs about 220,000 people (180,000 of whom are teachers), and serves 4.4 million students (2.3 million in high schools and 1.85 million in primary schools). The Secretary is also responsible for regulation of private schools in the system and maintains straight cooperation agreements with all municipality-run schools across the state. Finally, data with national coverage on high school graduates and college students come from (1) the Exame Nacional do Ensino Medio (ENEM), the Brazilian equivalent of the Scholastic Aptitude Test (SAT), and (2) the Exame Nacional de Desempenho de Estudantes (ENADE), an exam taken by a sample of college

[2] These figures are approximately 25 times larger than the ones observed in the USA, respectively. See Fryer (2010) on marriage markets and Massey and Denton (1988) on spatial segregation.

students in their first and last years of college. We merge these two sources of data by exploring administrative data made available by the Brazilian Ministry of Education. All data sets employed are presented in more detail below.

National Data on Households and Individuals

The first data set used in the present study is the 2000 Brazilian Census of Population (Censo Demografico, Instituto Brasileiro de Geografia e Estatistica, IBGE). The public use data, available for purchase from the IBGE website, consist of 10% samples of the population for localities with more than 15,000 inhabitants and 20% samples of the other localities. The interviews were conducted on private households. Information on dwellings' construction and general living standard measures related to access to basic public services and to ownership of assets/durable goods was collected. With respect to individual characteristics, a knowledgeable adult (most frequently the spouse of the household head) was asked to report basic demographics, migration, school enrollment, educational attainment, fertility history (for women 10 years and older), and sources of income.

The 2000 Census maintained the structure used in other editions and asked respondents to report individual members' "skin color or race," reflecting the Brazilian social norm that skin color and race are interchangeable concepts. For the skin-color question, respondents were given five options: white, black, indigenous, yellow (Asian), and brown. The indigenous population and Asians are a small fraction of the overall population (0.6%) and are geographically concentrated in the North and Sao Paulo regions, respectively. In the analysis that follows, we have dropped any household in which at least one member was reported to be in either of these two groups. Henceforth, browns and Blacks are combined in one group.

The census data are complemented using data from the Brazilian Household Survey (Pesquisa Nacional de Amostra de Domicilios, PNAD) also conducted by the Brazilian Census Bureau (Instituto Brasileiro de Geografia e Estatistica, IBGE).[3] The sampling scheme is based on a three-level multistage procedure, a successive selection of municipalities, census sectors, and households. The PNAD collects information on household demographic characteristics, income, labor supply, and human capital investments. The PNAD yearly random sample consists of approximately 65,000 observations on households.

Regional Data on Basic Education

Sao Paulo's Secretaria Estadual de Educação has agreed to share with the authors, under cooperation and confidentiality agreements, detailed information on the uni-

[3] Due to budgetary problems, the PNAD was not conducted in 1994.

verse of students in its education system. We merged data sets from three distinct sections of their data bank: matriculation information, standardized tests of proficiency, and transcript records.[4] In what follows, we refer to them as flow measures, standardized scores, and teacher assessments, respectively.

The Brazilian precollege educational system is organized into four levels: preschool (first grade), elementary school (second to fifth grade, ideally attended by 7–10-year-olds), middle school (sixth to ninth grade, ideally attended by 11–14-year-olds), and high school (tenth to twelfth grade, ideally attended by 15–17-year-olds). The elementary school comprises four school years. The basic disciplines offered at such an educational level are language (Portuguese), mathematics, social studies, and sciences. All the basic subjects are taught by the same teacher, but curricular activities also include physical education and the arts, which are taught by specialized teachers. For middle and high school students, teachers' subject specialization is required.

Matriculations in the entire state of Sao Paulo covering elementary, middle, and high schools are centralized by the Secretary of Education. The centralized system exists as a way to prevent parents from matriculating their children in more than one school (private or public) in order to guarantee a slot. In the past, this practice had itself led to a number of children who could not be absorbed by the system (because some had taken two or three slots). The centralization of information coupled with the generation of individual tracking numbers offers interesting ways of measuring student mobility within the school system, especially in the case of dropout and migration between or within public and private systems.

Standardized scores are collected in the context of Sao Paulo's performance evaluation system (Sistema de Avaliação de Rendimento do Estado de São Paulo, SARESP). The system consists of a statewide exam taken by students enrolled in grades 2, 3, and 5 (elementary school); in grades 7 and 9 (middle school); and in grade 12 (high school) of the public schools directly managed by the state-level authority. The test has been applied in slightly different formats since 1996. This chapter uses data from its 2007 edition onward. We have information about 1.8 million test takers in approximately 5,400 schools every year since then. All students/parents, and a sample of teachers answer a survey that asks questions on socioeconomic status, study habits, teaching and pedagogical practices, and perceptions about the school environment, among others.

The main purpose of such an exam is to measure the students' proficiency on the subjects assigned to each specific grade according to a predetermined curriculum. The exams have two sets of questions covering mathematics and Portuguese language. The mathematics set contains up to 24 multiple-choice questions. The Portuguese language component also includes a short essay for more advanced grades. Grading is electronic for the multiple-choice questions: students use a test sheet, which is scanned and graded automatically, without human interference. This grad-

[4]The Secretary itself has never attempted to combine these data. There are different teams of bureaucrats in charge of each of these sections. This is the first time these data are used in an integrated format.

ing procedure assures that a completely blind score (relative to a child's identity) is obtained.[5] We combine matriculation and test score data in order to follow proficiency gains over time for individual students.

The SARESP exams are taken in late November (spring), close to the end of the academic year, during class time and in the same place where the students take regular classes. Students take the exam on two consecutive days, one for each subject. Because 5th, 7th, 9th, and 12th graders (the focus of this chapter) can attend classes in the morning, in the afternoon, or at night, a different exam (yet similar in difficulty) has to be prepared for each group. All students who usually attend classes during the same school shift take the same test. The State Secretary of Education hires an independent institution to prepare the exam, according to predetermined guidelines. To oversee the students during the test, teachers from other schools are mobilized, such that students are supervised by a teacher different from their regular ones. External observers are also assigned to each school to guarantee the strict fulfillment of all rules.

Microdata on these tests' results are provided in the format of percentage of correct answers and proficiency scores in each subject after application of item response theory (IRT) methods. These scores are also converted into a (grade-subject-specific) four-step classification system that reflects educators' consensus regarding levels of proficiency (below basic, basic, sufficient, and more than sufficient) after the statistical definition of anchor items. Proficiency in the essay portion of the language exam is reported in a separate four-level scale. Individual-level results from SARESP are not made publicly available to children, parents, or schools. Until 2008, school-level results were not used in any explicit accountability system either, and they have been serving the sole purpose of "diagnosing" the entire educational system. From that year onward, the education authority has implemented a bonus payment scheme that rewards schools' personnel based on test performance by their students.

Transcript data have been based on a uniform criterion-referenced rule for teacher evaluations adopted by the Secretary's directly managed schools since September 2007. According to these guidelines, all teachers have to attribute numeric integer grades ranging from 0 to 10, and the passing grade is set at 5 points. As part of the official records, teachers also compute attendance rates on a 0–100 (percentage) scale. Teachers and other school administrators were not given instructions on how to attribute grades as a function of a student's observed proficiency level beyond the ones implicitly imposed by a uniform school curriculum. The state administration provides pedagogical material aligned to such a curriculum, and teachers are supposed to evaluate students according to proficiency in such material. Nonetheless, no explicit guidance regarding the design of evaluations (except for questions included at the back of the teacher's booklet) is given. Therefore, the uniformization of grading scales occurs with respect to format but not necessarily in terms of meaning.

[5] For students in grades 2 and 3, scoring is not blind. Either their own teacher or a committee (formed within the school) grades the exams.

National Data on High School and College Performance

Starting in 1998, the Ministry of Education implemented a low-stakes exam focused on measuring scholastic abilities for individuals who were graduating or had previously graduated from high school. The original objective was to offer some sort of certification of high school knowledge for those entering the labor market. The so-called Exame Nacional do Ensino Médio (ENEM) is now a comprehensive yearly test designed to assess several subjects. Participation is still voluntary, and students from both public and private schools are eligible to take it. Its popularity and importance increased after 2004, when it became the main criterion to select the recipients of the newly created federal scholarships program, the ProUni (College for All), which awarded full or partial scholarships to low-income students who studied in tuition-free high schools (public or private). At the same time, some colleges, including the prestigious federal universities, began to use the scores obtained in the ENEM as one of the criteria to select students in competitive admission processes.[6]

The test format changed over time, comprising 63 objective, multiple-choice questions, and a writing sample in the 2006 edition used in this chapter. The exam was taken in just 1 day in October, and it had the same questions nationwide. In this edition, the test covered four subjects: mathematics, Portuguese language, natural sciences (chemistry, biology, physics), and social studies (history and geography). The exam is not explicitly divided by subject. Usually, the questions require the understanding of more than one subject. Scores were simply the percentage of correct answers obtained by the candidate.[7]

We merge ENEM data with the data of the 2007 Exame Nacional de Desempenho de Estudantes (ENADE), taken by college students at the end of their first and last years of college attendance. The ENADE exam applied to a sample of students from college matriculation records. The exam is applied by the Ministry of Educations and is used for college accreditation. ENADE 2007 was taken by approximately 250,000 students in their first year of college. We exclude from our analysis students who scored zero on ENADE, resulting from boycott by organized student organizations. ENADE evaluates two areas, major-specific material (covering material delivered in the first year of college) and a general formation material (which basically reflects, once more, material that should be mastered by the end of high school).

[6] Thanks to a provision in the Federal Constitution, public institutions of higher education cannot charge tuition, independent of the socioeconomic standing of the student. As a consequence, there is excess demand to enroll, and candidates have to excel in highly competitive entrance exams in order to be admitted. Private colleges charge tuition and generally have lower quality compared with public institutions. Further, state universities are not allowed to charge tuitions either, nor are they allowed to discriminate against out-of-state applicants by giving more weight to state residents.

[7] In 2009, the exam experienced another major change, when it became the only admission criteria to enroll in several federal universities. The number of questions jumped from 63 to 180, the exam is taken in two consecutive days, and item response theory has been used since then to calculate the scores.

Background

Brazil was colonized by Portugal starting in the year 1500. Colonization followed extractive institutions, and Portuguese familial settlements were rare. After an initial period of enslavement of the indigenous populations, expansion of economic activities toward sugarcane plantations required more laborers and led the colonizers into one of the most profitable activities of the colonial times: the trafficking of enslaved Africans. For over 200 years, until the middle of the nineteenth century, approximately 3.6 million Africans were sent to Brazil as slaves. The excessive dependence on such a labor force made Brazil the last country in the whole Western hemisphere to abolish slavery in 1888.

During this early period, migration flows from Europe were composed mostly of male colonizers. This created a clear sex-ratio imbalance in the colony. As a result, the mixing of Whites and Blacks was set in motion, explaining a more diffuse concept of race in Brazil than in the USA. In practice, ancestry was substituted by a phenotype-based perception of racial groups. In this sense, beyond a Black–White dichotomy, Brazil ended up heading toward a racial debate with many shades of gray. Current census counts indicate a population of self-declared African origin only smaller than that in Nigeria, corresponding to approximately half of the 180 million Brazilian inhabitants. This is most likely an underestimate nonetheless. Genetic research has recently uncovered that a large proportion of Brazilian self-declared Whites have mitochondrial DNA (maternal lineage) that can be traced to an African origin.[8]

Large rates of miscegenation have led most observers to conclude that, in the absence of racial conflict, Brazil had simply avoided the consequences of enslavement on socioeconomic outcomes and mobility.[9] That is not the picture emerging from a careful study based on sociodemographic data, however. There is now overwhelming evidence that such racial tolerance indicators coexist with pertinent differences between Whites and Nonwhites in terms of wages and other measures of living standards (see Arias et al. 2004; Campante et al. 2004; Telles 2004). A recent publication by the World Bank (see Perry et al. 2006) extended that analysis and presented evidence that even returns to schooling (in terms of wages) among dark-skinned individuals are lower than among Whites. These findings suggest that industrialization, economic progress, and modernization of the social structure have not eliminated color as a potential determinant of social inequalities (see Hasenbalg et al. 1999) more than 100 years after the abolition of slavery.

In order to illustrate these stylized facts, we reproduce such findings using microdata from the 2000 Brazilian Census of Population. Figure 7.1 presents rates of home ownership and access to public utilities. Blacks are consistently found in worse conditions when compared with Whites on all dimensions of living standards investigated. They are less likely to own their homes, even considering the loose

[8] See Parra et al. (2004).

[9] See Pierson (1945).

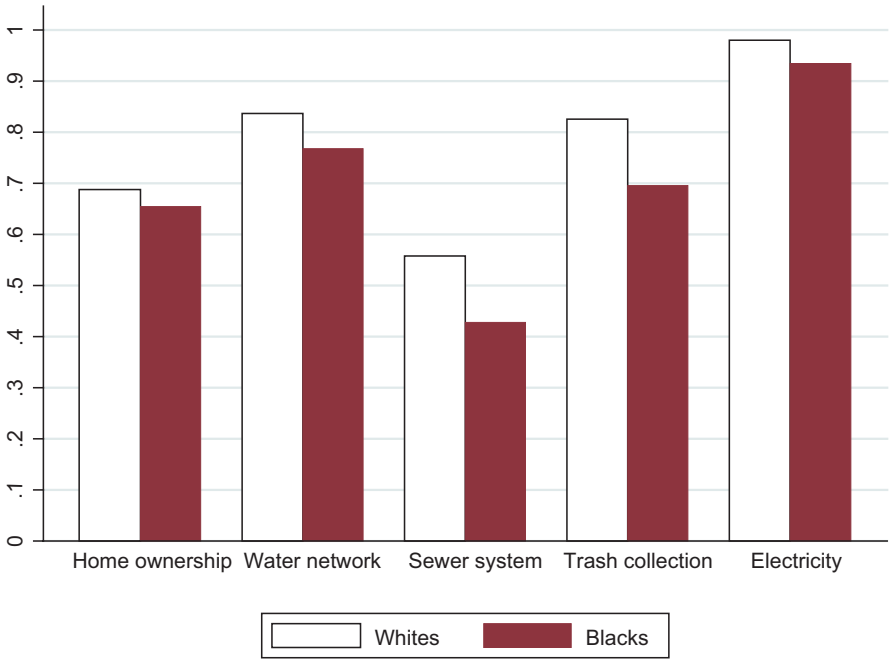


Fig. 7.1 Living standards by race, Brazil 2000. Data source: Population Census 2000, IBGE

definition of ownership used by the Census enumerators (not based on formal/legal ownership). Their homes are also less likely to be served by water, electricity, and sewer systems. They also live in areas less likely to have trash regularly collected by the public sector.

We then consider differences in the main source of income for Brazilian families: the sale of one's labor. Figure 7.2 explores the same source of data as mentioned above by looking at the distribution of hourly wages (in a log scale) commanded by workers of different racial background at 35 years of age. For both men and women, the evidence indicates that the wage distribution is shifted to the right for Whites. In general, hourly wages are approximately 40 % higher among the latter.

Such differences in income-generating capabilities are remarkably constant in the 15-year period between 1995 and 2009. Data from the Brazilian Household Surveys in the period indicate that both hourly wages and unemployment rates (for male adults aged 30–35) are less favorable for Blacks.[10] Racial differences are slightly reduced in terms of wages, but there is no sign of relative improvement in the unemployment indicator among Blacks, as seen in Fig. 7.3.

[10] We focus on male workers in order to avoid changes in the composition of female labor force due to time-changing participation decisions.

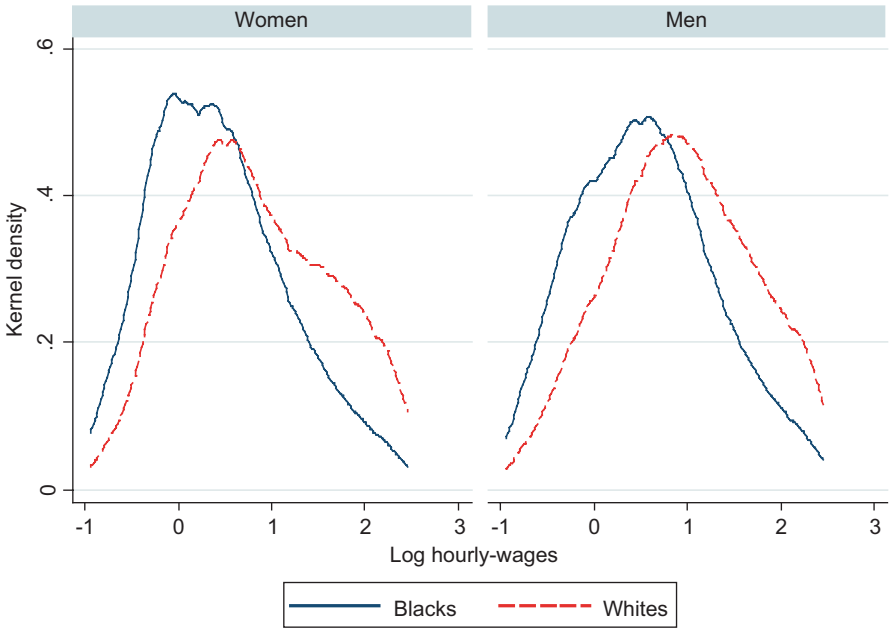


Fig. 7.2 Hourly wages by race (in logarithms), Brazil 2000. Data source: Population Census 2000, IBGE

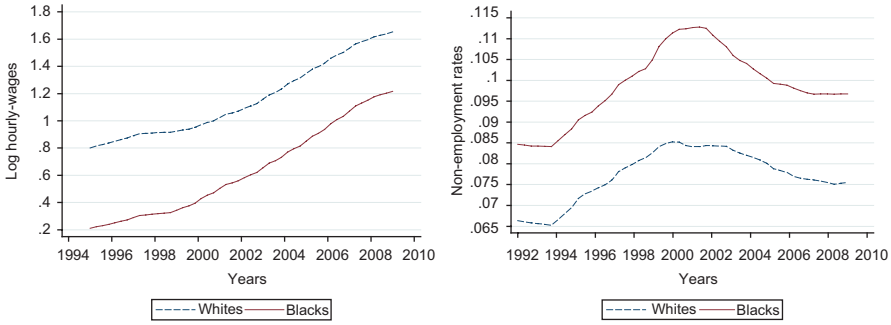


Fig 7.3 Hourly wages and non-employment rates for males by race (in logarithms), Brazil 1992–2009. Data source: PNAD, IBGE

There are at least two main factors that could explain racial differentials in those economic outcomes. It is possible that dark-skinned individuals receive lower wages, are less likely to be employed, or have limited access to certain jobs due to discrimination or prejudice among labor market actors. Alternatively, observed differences may be the result of darker-skinned individuals' relatively lower investment in the accumulation of skills, which translates into a scarcity of economic opportunities. We focus here on the latter and show how differently (in terms of human

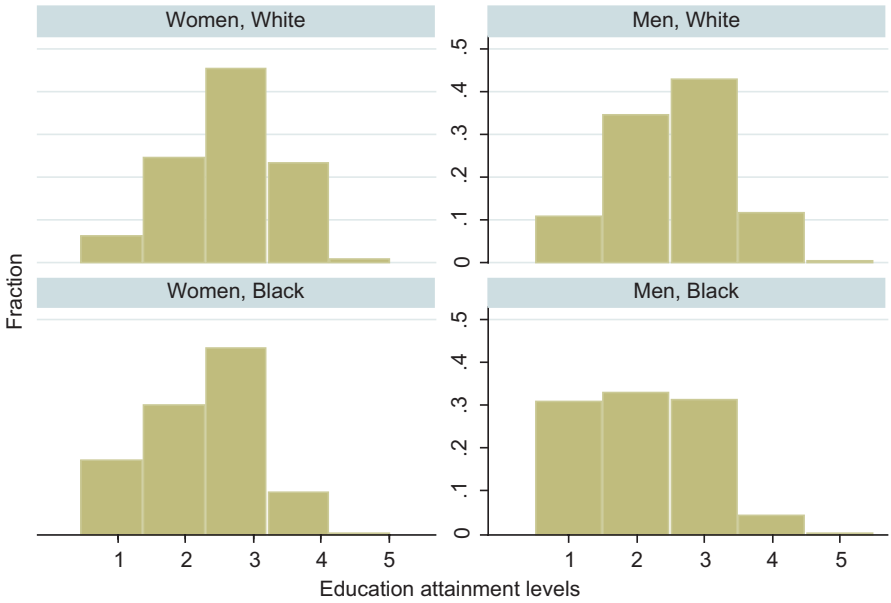


Fig. 7.4 Education attainment by race (completed degrees), Brazil 2000. Data source: Population Census 2000, IBGE

capital) Black and White Brazilians arrive in the labor market. Figures 7.4 and 7.5 reproduce the distribution of education attainment by race in the year 2000 and the evolution of years of schooling completed by race among adults from 1992 to 2009, respectively. It can be seen that Blacks consistently accumulate less human capital in the form of formal education (lower quantity). They are overrepresented on the lower levels of achievement (less-than-primary and primary) and underrepresented among holders of high school and college degrees. Despite an overall increase in educational attainment, in the 20 years since 1992, there is a constant difference of 2 years of completed schooling between Blacks and Whites born between 1957 and 1974.

Can these differences in completed years of schooling explain the disparities in earnings potential we observed above? In order to address this question, we employ simple regression analysis. We compute both unemployment and log-hourly-wage differentials before and after controlling for years of formal education in a sample of males aged 30–35 during the 1992–2009 period. Our findings indicate that accounting for educational disparities accounts for roughly 50% of the differences between Blacks and Whites. Whereas differences in unemployment rates are reduced from 2 to 1 percentage point, those in hourly wages drop from 0.53 to 0.24 log points. Racial differences remain significant, nonetheless.

In fact, in Fig. 7.6 we reproduce estimates for log-hourly-wage density functions (males only) stratified in four education groups: no schooling or preschool

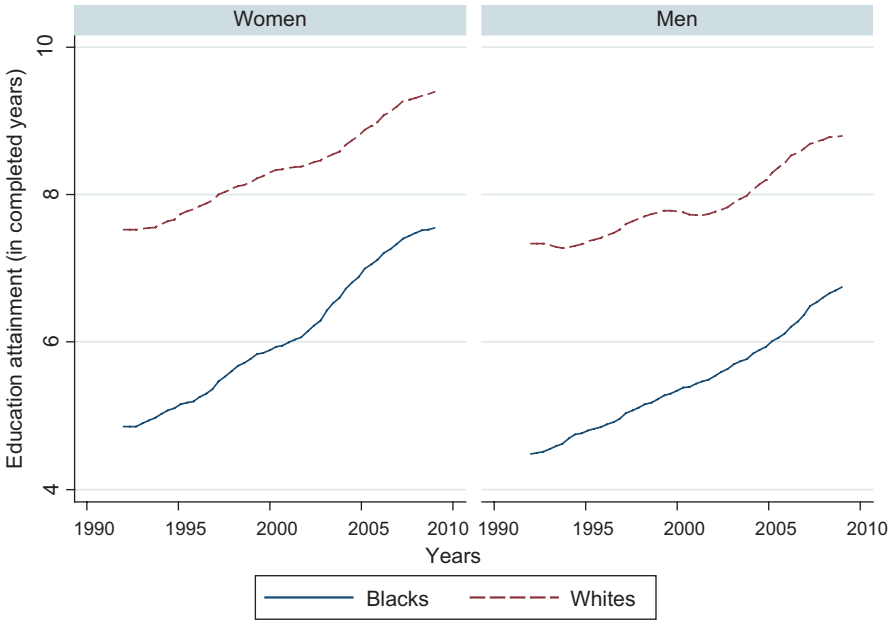


Fig. 7.5 Education attainment by race over time (completed years) for adults age 35, Brazil 1992–2009. Data source: Brazilian Household Survey (PNAD), IBGE.

only (0–1 year), elementary education only (5 years), primary education only (9 years), and high school education only (12 years). It can be seen that in all cases, but particularly for groups with more education, the differences between Blacks and Whites (favoring the latter) are still sizable. Estimates for differences in mean hourly wages in these groups are 0.20, 0.20, 0.25, and 0.26 log points, respectively. In any case, such stylized facts indicate that gaps in the quantity of education seem to be one of the central pieces for the understanding of differences in socioeconomic outcomes between Black and White Brazilians.

What is clearly left out of this picture is that despite having the same years of education, there is no guarantee that these Black and White adult Brazilians were exposed to education of the same quality. In other words, treating years of completed education as a homogeneous set of skills within the Brazilian population is likely no more than wishful thinking. Unfortunately, data that could further aid the understanding of racial gaps in wages are not available in Brazil. For the adult population described in the figures above, there is no data collection on the amount of skills accumulated or even the type of education (private versus public) acquired, as is common in North-American data that include information like the Armed Forces Qualification Test (AFQT) scores.[11] Even if only speculative, yet based on the North-American literature, we are left with the conclusion that the reduction on

[11] See O'Neil (1990), Maxwell (1994), Neal and Johnson (1996), Heckman (1998), and Carneiro et al. (2005).

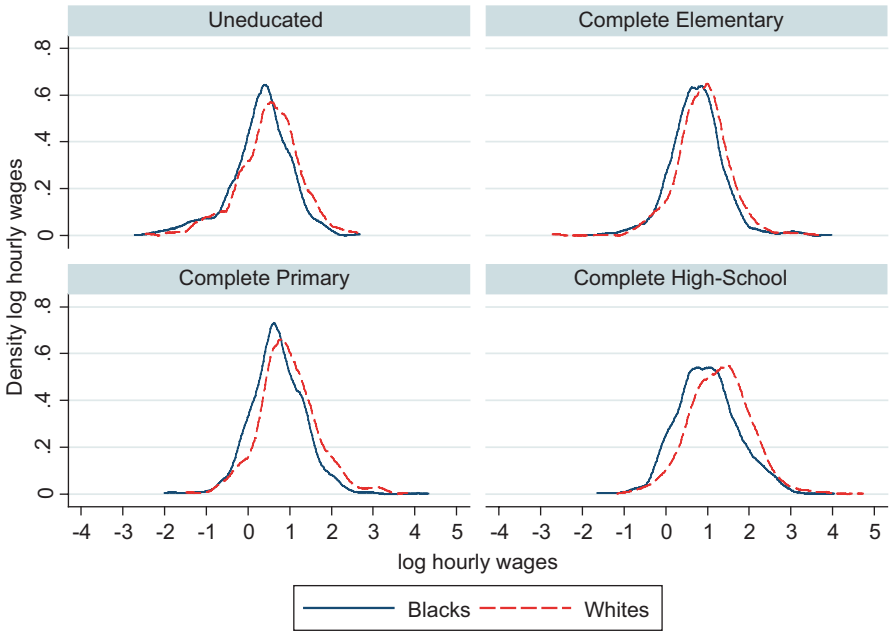


Fig. 7.6 Log wage distributions for adults aged 30 to 35, Brazil 2001. Data source: Brazilian Household Survey (PNAD), IBGE

Brazilian racial socioeconomic gaps in the years to come will be proportional to the differences in both the quantity and the quality of education acquired by Blacks and Whites. With this in mind, we turn to the description and assessment of recent policies that either directly or indirectly changed (or are likely to change) trends in human capital accumulation across racial groups.

Recent Trends in Attainment Gaps Based on Aggregate Data

The 1990s marked a decade of change in Brazil. After years of struggle with chronic inflation and economic turmoil, the country started experiencing stability in 1995. The control of inflation represented a particularly dramatic improvement in the life of the unbanked (and nonindexed) poor, representing a maintenance of purchasing power previously unthinkable. In that sense, planning and investment in the education of children became more attractive to poorer parents than they previously were, increasing the demand for schooling.

Most importantly, once macroeconomic instability ceased to be the main focus of the Brazilian government, new policies started being designed and implemented in different spheres. In terms of education policy, there was a significant regula-

tory wave. We point to three new policies: First, initial steps were taken in the establishment of a system of accountability based on national examination of students (Sistema Nacional de Avaliacao da Educacao Basica, SAEB) that led to the implementation of national targets for improvements in 2007. Second, the federal government created the so-called Bolsa Escola Program, a conditional cash transfer mechanism that paid families to enroll and keep their kids in school.[12] Finally, there was a sharp change in the distribution of the federal budget for education affecting both amounts and regional distribution of resources for school construction, maintenance, and improvement (Fundo de Manutencao e Desenvolvimento do Ensino Fundamental, FUNDEF).

Together, these systemic changes produced progress in standard educational policy targets. There was, for example, an increase in the rates of enrollment of school-aged children. This "democratization" process has had a major impact on the composition of the student body and has increased the representation of a deprived portion of the population within classrooms.

From the perspective of the central discussion of this chapter, the democratization has brought to the classroom students with darker skin tones, who would have been out of school otherwise. This pattern can be seen in Fig. 7.7, where we reproduce patterns of school enrollment at age 7 (elementary school entry age) from 1989 to 2009. The reduction in the racial gaps regarding the access to education at this age is truly remarkable. Even if not directly resulting from policies that target racial differences, this increase in access to education has enormous potential in reducing gaps in socioeconomic outcomes among future generations of Brazilian Blacks and Whites.

The fulfillment of such potential would require that children of disadvantaged backgrounds not only entered but also stayed in school, however. This does not seem to be the case. When we examine the evolution of enrollment at age 15 during the same period (Fig. 7.8), we conclude that there was no reduction in dropout rates that followed differential patterns across races. In other words, over time Black children became more likely to enter school but not more likely to finish primary education relative to Whites.

However, some educational policies could help transform this massive entry of students in the system into accumulated years of education. We explore the fact that in Brazil the education policy is decentralized to investigate a specific student-retention initiative. In particular, starting in 1996, the state of Sao Paulo's public school system adopted an automatic promotion scheme. This policy grouped contiguous grades into cycles, with retention occurring only at the end of each cycle. In the case of Sao Paulo, two cycles were created. Cycle 1 encompasses grades 1–5 and cycle 2 covers grades 6–9. High schools were not included in the automatic promotion scheme. Under such rules, a student is promoted to the next grade if she attends more than 75% of the classes, irrespective of her mastery of the material that was covered during the academic year. Insufficient proficiency can result in

[12] This was later phased into the current Bolsa Familia Program, the largest conditional cash transfer program in the world.

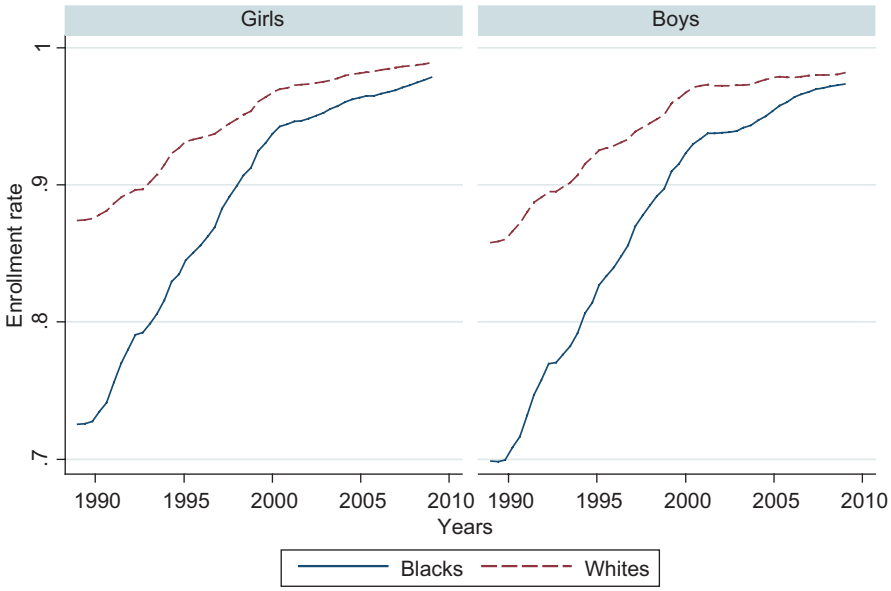


Fig. 7.7 Enrollment rates for children aged 7, Brazil—1989–2009. Data source: Brazilian Household Survey (PNAD), IBGE

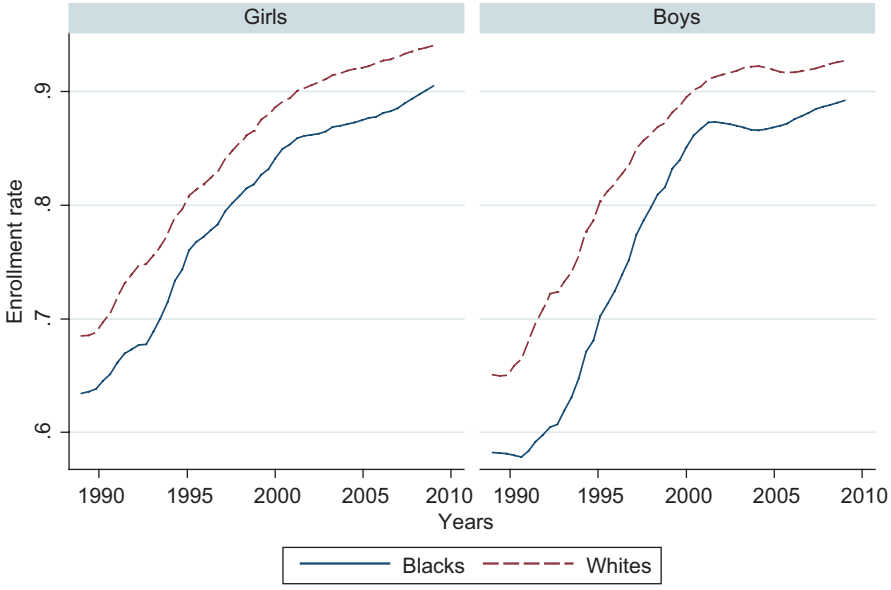


Fig. 7.8 Enrollment rates for children aged 15, Brazil—1989–2009. Data source: Brazilian Household Survey (PNAD), IBGE

grade retention only at the end of each cycle, nonetheless. In this case, the pupil must repeat the last grade within that cycle.

Several international organizations, including the World Bank, support this policy as an effective way to curb low-grade completion and to decrease dropout rates. The general lines of the argument are that grade retention could adversely affect noncognitive skills (like confidence and self-esteem), increasing anxiety levels and harming learning capacity. In this scenario, a better alternative would be the promotion to the next grade despite the insufficient performance.[13]

In any case, the results from this policy (coupled with the democratization) in terms of racial gaps can be observed in Figs. 7.9 and 7.10. It is remarkable to note that in Sao Paulo, convergence in attainment (for 10- and 15-year-olds, respectively) between Blacks and Whites is much more pronounced than it is in other parts of the country. The timing of convergence coincides with the adoption of automatic promotion. Even if not aiming directly at racial issues, by benefiting students at the bottom of the skill distribution, automatic promotion has a disproportional impact in enrollment and dropout rates among Blacks. These findings indicate that most of the differences in the rate of primary education are bound to become irrelevant for the understanding of Black–White socioeconomic outcomes in the near future, at least in Sao Paulo.

However, when we take a closer look at the enrollment in high school and college, the picture that emerges is less optimistic. As can be seen in Fig. 7.11, there is no reduction in the gap in high school graduation rates. In fact, we also detect that high school enrollment racial gaps in Sao Paulo have even been growing since 2003 (not shown). Differences in access to college are also pronounced. Figure 7.12 shows that since 1992 there has been no sign of reduction in gaps. Policies directly or indirectly aimed at closing racial differentials in both high school and college levels seem ineffective so far in terms of enrollment.

Moreover, even if Black and White individuals are more likely to have closer levels of schooling (measured in years of formal education), it is still an open question whether the quality of education received by each group can be considered comparable. In order to discuss these challenges further, we attempt to extract information by following students' trajectory within Sao Paulo's education system.

Measuring Education Gaps in Sao Paulo: Lessons from Longitudinal Microdata

In this section, we investigate the racial gap in education in two main dimensions: (1) student progression in the school system and (2) student performance on standardized tests. In both cases, we draw our conclusions exploring unique longitudinal data that we were able to construct from administrative information. Table 7.1

[13] See King et al. (2008).

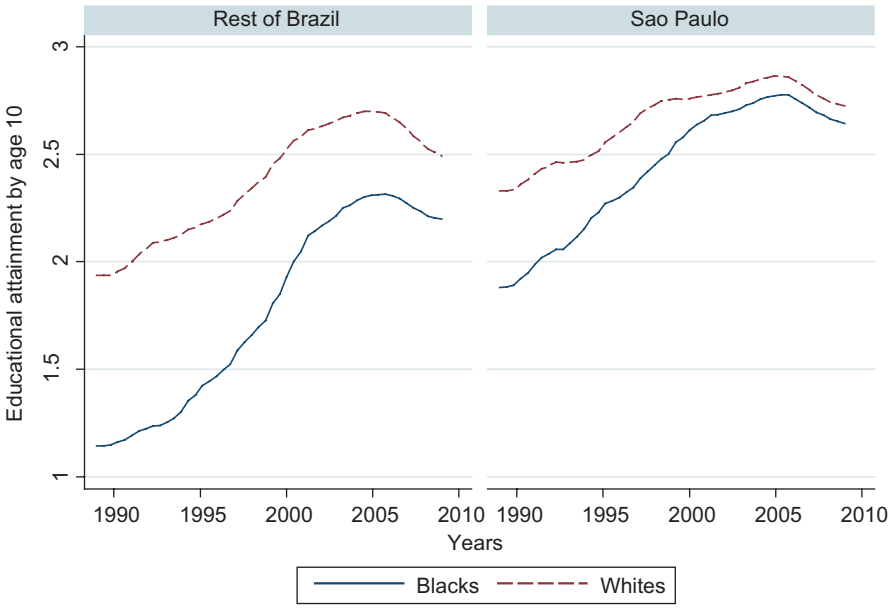


Fig. 7.9 Educational attainment for children aged 10 (in completed years), Sao Paulo versus Rest of Brazil—1989–2009. Data source: Brazilian Household Survey (PNAD), IBGE

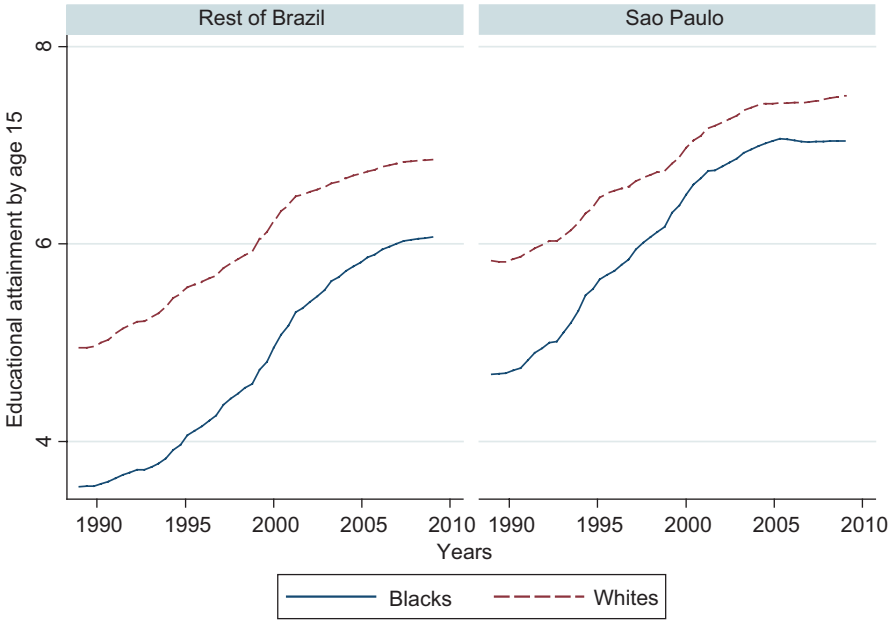


Fig. 7.10 Educational attainment for children aged 15 (in completed years), Sao Paulo versus Rest of Brazil—1989–2009. Data source: Brazilian Household Survey (PNAD), IBGE

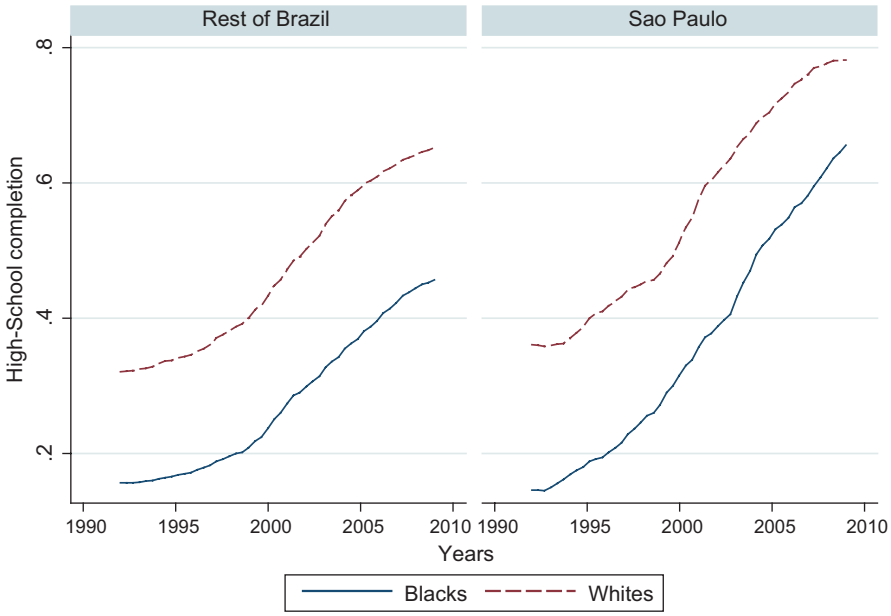
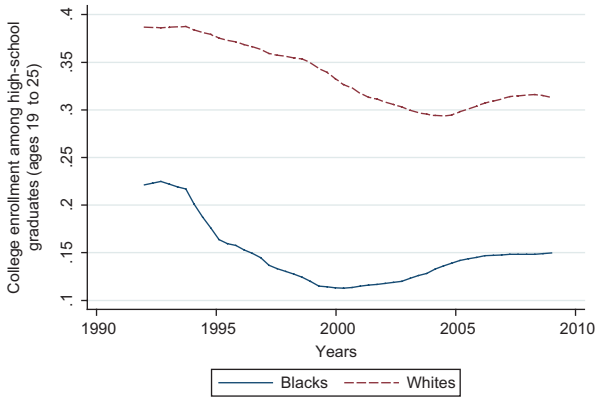


Fig. 7.11 High-school completion rate (by age 24), 1992–2009. Data source: Brazilian Household Survey (PNAD), IBGE

Fig. 7.12 College enrollment for high-school graduates (ages 19–25), Sao Paulo—1992–2009. Data source: Brazilian Household Survey (PNAD), IBGE



focuses on the progress of the White students through the Sao Paulo educational system (private and public schools included). The figures tell us that in the year 2011, 281,500 students out of the 346,000 who were enrolled in the first year of elementary school (second grade) in 2007 reached the sixth grade without interruption; that is, 81.4% of the second graders of the 2007 cohort did not repeat a grade or leave school throughout these four schooling years. Table 7.2 reproduces the same analysis for Black students. We detect a difference across racial groups.

Table 7.1 Attrition rates for White students, all types of schools

	2nd grade	3nd grade	4rd grade	5th grade	6th grade	Total
2007	345,838					345,838
	100.00%					100.00%
2008	13,763	323,050				336,813
	3.98%	93.41%				97.39%
2009	1,924	25,650	306,152			333,726
	0.56%	7.42%	88.52%			96.50%
2010	400	5,044	26,820	298,699		330,963
	0.12%	1.46%	7.76%	86.37%		95.70%
2011	131	1,245	6,012	33,506	281,517	322,411
	0.04%	0.36%	1.74%	9.69%	81.40%	93.23%

Table 7.2 Attrition rates for Black students, all types of schools

	2nd Grade	3nd Grade	4rd Grade	5th Grade	6th Grade	Total
2007	186,135					186,135
	100.00%					100.00%
2008	9,977	169,970				179,947
	5.36%	91.32%				96.68%
2009	1,664	19,184	157,237			178,085
	0.89%	10.31%	84.47%			95.68%
2010	356	4,530	19,292	152,112		176,290
	0.19%	2.43%	10.36%	81.72%		94.71%
2011	117	1,136	5,252	24,896	139,044	170,445
	0.06%	0.61%	2.82%	13.38%	74.70%	91.57%

Only 74.7% of the Black second graders (in 2007) reached the sixth grade in 2011. The racial dropout/failure gap is larger for Blacks in each adjacent pair of schooling years. The difference across groups is particularly large after the first year of elementary education and in the transition from elementary to middle school (fifth to sixth grade). During this latter transition, about 5% of the White students (enrolled in the second grade in 2007) fail or abandon the school, whereas 7% of the Black students in the same cohort do not make it to middle school in an appropriate time.

Tables 7.3 and 7.4 reproduce the analysis presenting the school progress figures for the students of the 2007 cohort between grades 8 and 12. Again, they show important differences in school progress across racial groups. Only 51% of the Black students in the eighth grade reach the last year of high school (grade 12), whereas 62% of the White students do so. The pattern observed for younger students also shows up among older ones. Racial gaps are pertinent over all school years investigated and are again particularly relevant at the transition from middle to high school (ninth to tenth grade). During this transition, about 11% of the White students (enrolled in the eighth grade) fail or drop out, whereas 15% of the Black students do not make it to high school at the time they should.

The measurement of school-years transition probabilities also allows a more careful investigation into the automatic promotion scheme adopted in schools directly managed by the Sao Paulo school authority. In Fig. 7.13, we compare the

Table 7.3 Attrition rates for White students, all types of schools

	8th Grade	9th Grade	10th Grade	11th Grade	12th Grade	Total
2007	250,896					250,896
	100.00%					100.00%
2008	11,176	229,145				240,321
	4.45%	91.33%				95.79%
2009	2,329	22,153	201,168			225,650
	0.93%	8.83%	80.18%			89.94%
2010	576	5,750	36,859	173,259		216,444
	0.23%	2.29%	14.69%	69.06%		86.27%
2011	60	893	10,648	27,231	156,705	195,537
	0.02%	0.36%	4.24%	10.85%	62.46%	77.94%

Table 7.4 Attrition ratesfor Black students, all types of schools

	8th Grade	9th Grade	10th Grade	11th Grade	12th Grade	Total
2007	142,758					142,758
	100.00%					100.00%
2008	9,219	125,078				134,297
	6.46%	87.62%				94.07%
2009	2,076	17,440	103,898			123,414
	1.45%	12.22%	72.78%			86.45%
2010	538	4,906	26,345	84,799		116,588
	0.38%	3.44%	18.45%	59.40%		81.67%
2011	67	752	8,355	17,847	73,852	100,873
	0.05%	0.53%	5.85%	12.50%	51.73%	70.66%

transition probabilities of students in state-run and municipality-run schools in the system. The former all adopted automatic promotion, whereas only a minority of the latter has done so in this period. We find that racial differences in attrition rates are indeed virtually nonexistent in schools that adopt automatic promotion.

To what extent do differences in attrition between school levels result from students' own learning experiences? We investigate this after observing sizable differences in fifth- and ninth-grade SARESP mathematics test performances for Blacks and Whites in schools directly managed by the Sao Paulo school authority, which are reproduced in Fig. 7.14. Tests of difference in means indicate gaps of 0.34 and 0.29 standard deviations, respectively, favoring Whites.

Then, in Fig. 7.15, we cross performance in standardized tests in mathematics at the end of elementary education (x-axis) with attrition rates in terms of entry into middle school (y-axis). The dashed line illustrates attrition levels for White students, whereas the solid line represents the difference in attrition between Blacks and Whites (dotted lines indicate 95% confidence intervals). Attrition rates decrease rapidly as test scores increase. Importantly, once test scores in mathematics are accounted for, there is no detectable gap in attrition rates between Black and White students. This evidence suggests that all the relevant differences in 1-year attrition rates between the races at this schooling level come from underlying differences in proficiency.

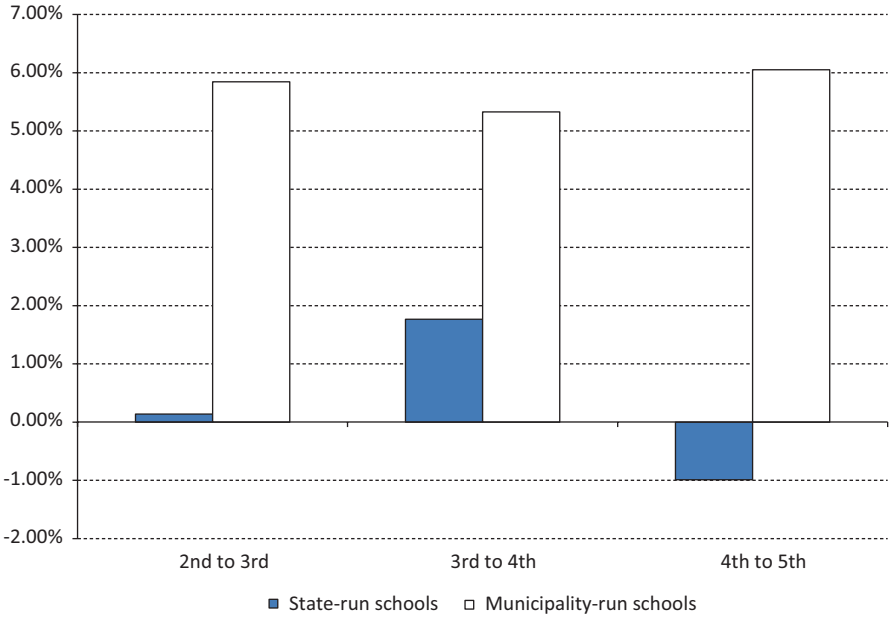


Fig. 7.13 Difference in attrition rates (Black versus White), by school system Sao Paulo—2007–2010

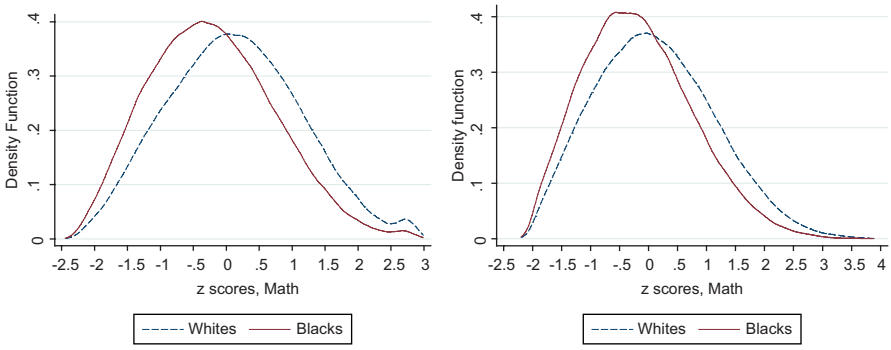


Fig. 7.14 5th and 8th Grade Math Scores, Sao Paulo Public Schools 2008. Data source: SARESP

Despite similarities in patterns, the difference in attrition between Blacks and Whites in the transition between middle and high school is not fully explained by ninth-grade mathematics tests scores, as we show in Fig. 7.16. There is an indication, therefore, that decisions to enroll in high school are more elaborate, and focus on other dimensions is not directly captured by standardized test material.

Since proficiency gaps are responsible for a large share of racial differences in educational attainment decisions, we turn to a more careful investigation of their

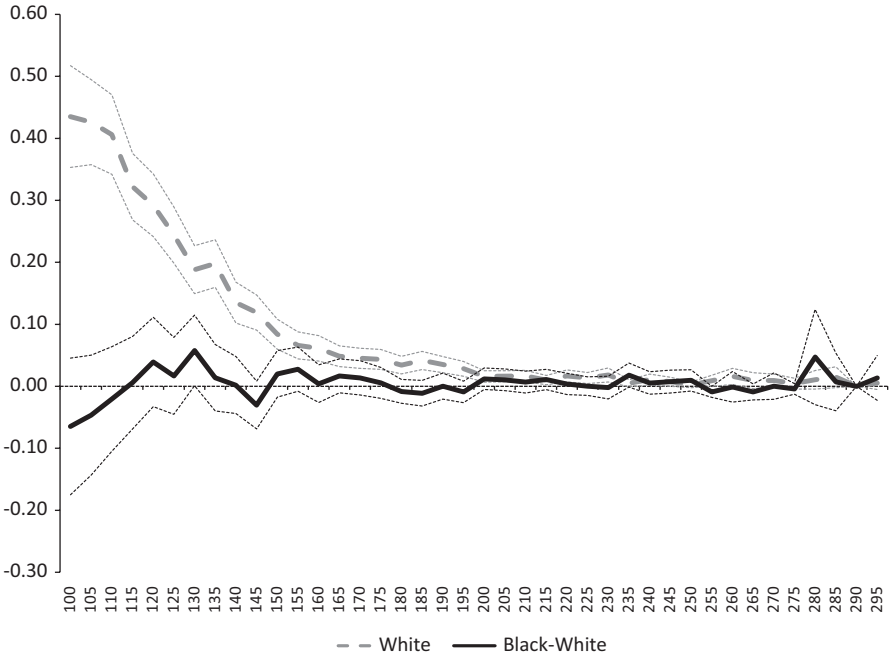


Fig. 7.15 Attrition Rates by Proficiency Level in Math elementary to middle school transition. Data source: SARESP and matriculation records

prevalence and persistence. Because the standardized test scores for initial grades (grades 2 and 3) are not computed using IRT, they cannot be directly compared to scores of the other grades. Therefore, we report results using a z-score transformation of the percentage of correct answers by each student. The computed gaps for grades 2, 3, and 5 were obtained using the cohort of students who were tested in the second grade in 2007 and who did not fail or drop out of the school system at least until fifth grade. Gaps for grades 7 and 9 were calculated using data on the cohort of students who were in the fifth grade in 2007 and did not fail or drop out of the school system at least until the ninth grade. That is, these students were tested in grade 7 in 2007 and in grade 9 in 2009. Lastly, gaps for grade 11 were obtained using data on the cohort of students who were in grade 9 in 2007 and who did not fail or drop out of the school system at least until twelfth grade. Therefore, these students were tested in grade 9 in 2007 and in grade 12 in 2010.

By selecting our sample in this way, we avoid mixing attrition issues with longitudinal evolution of proficiency. We calculate the racial gaps employing three statistical models. The first model delivers the raw differences between Black and White students, without accounting for potential differences in the school environment and students' socioeconomic characteristics. The second model accounts for differences in observable socioeconomic characteristics. The third model compares students conditional on their attending the same school and having similar socioeconomic

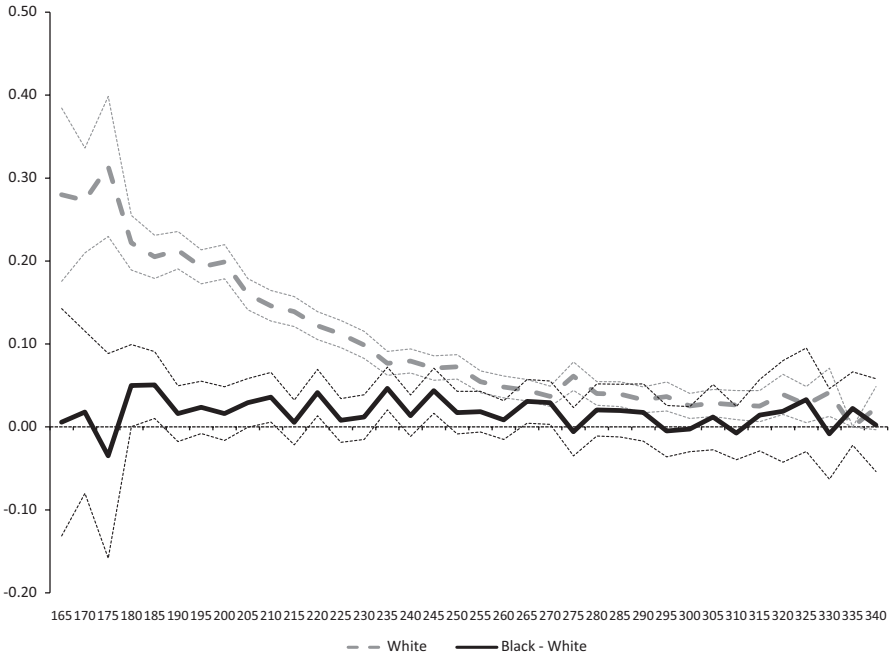


Fig. 7.16 Attrition Rates by Proficiency Level in Math middle to high school transition. Data source: SARESP and matriculation records

characteristics. Figure 7.17 presents the results for the four versions (results for the nontested grades—4, 6, 8, 10, and 11—were obtained through linear interpolation).

As expected, differences in socioeconomic characteristics and the school environment account for about 55% of raw racial gap, especially in initial grades; that is, the calculated gaps using model 3 (gray line) are roughly 55% of the raw gap (black solid line). However, even after controlling for the school environment and students' socioeconomic background a gap remains for all grades. The racial gap slightly increases during elementary school (from 0.09 to 0.13 standard deviations) and returns to its initial level during middle and high school years. Notwithstanding, the evidence is consistent with a constant racial gap over time. In particular, it reveals the existence of a gap that children bring to school at the time of entry, which is neither explained away by socioeconomic differences captured by parental education and ownership of durables nor eliminated by the training offered in these public schools.

Figure 7.18 reproduces the same exercise using IRT scores (therefore, grades 2 and 3 are not used). This time we display the evolution of the IRT scale for Black and White students across grades. The same pattern obtained with the standardized percentage of correct answers is observed for IRT scales; that is, the observed racial gap in proficiency seems to be constant across grades.

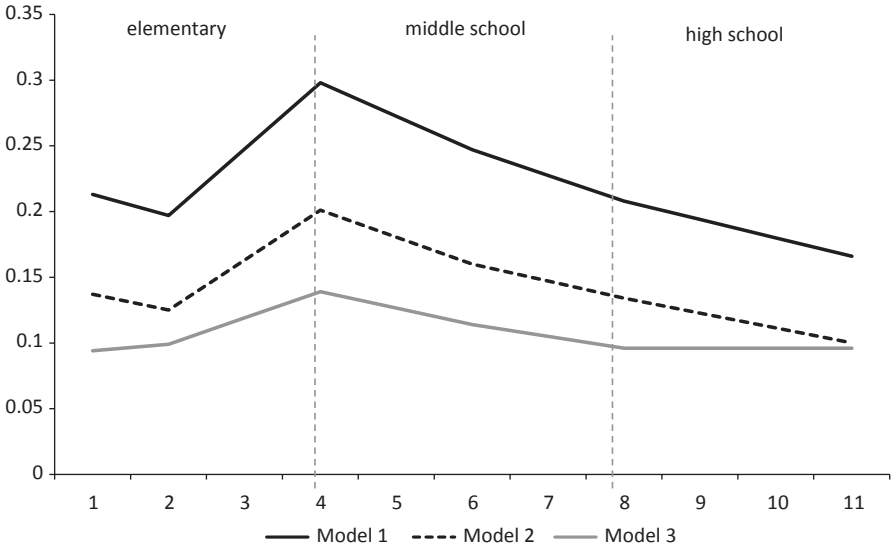


Fig. 7.17 Math Proficiency Gaps (z-scores % of correct answers) over time in school. Data source: SARESP

Therefore, our results indicate that in spite of the recent trend of reduction in the racial gap in years of education, led by the democratization in school access, the proficiency gap does not follow the same trend. These findings suggest that even if the democratization process eventually closes the secular racial gap in years of education, Blacks will stilllag behind Whites in proficiency. A remarkable message of our exercise is that the usual explanations for the existing racial gap in proficiency, such as differences in school quality, school environment, and socioeconomic background between Black and White students, explain only about 55% of the gap. Blacks still underperform Whites of identical background by 10% of a standard deviation in mathematics tests.

These findings are compatible with US evidence suggesting that differences in skills between Blacks and Whites emerge during infancy, affecting both cognitive and noncognitive aspects of child development and becoming more prominent while children attend elementary school.[14] We interpret the early appearance and the dynamics of such racial gaps as a call for a better understanding of the role that a child's race plays in the school and in classroom settings. Based on evidence uncovered in this chapter, one can arguably say that among the greatest challenges of the Brazilian basic educational system is designing and adopting policies capable of closing these gaps. In order to achieve this goal, it is necessary to identify the main causes of the proficiency gap that go beyond the usual explanations related to differences in school quality and socioeconomic background.

[14] See Fryer and Levitt (2004b).

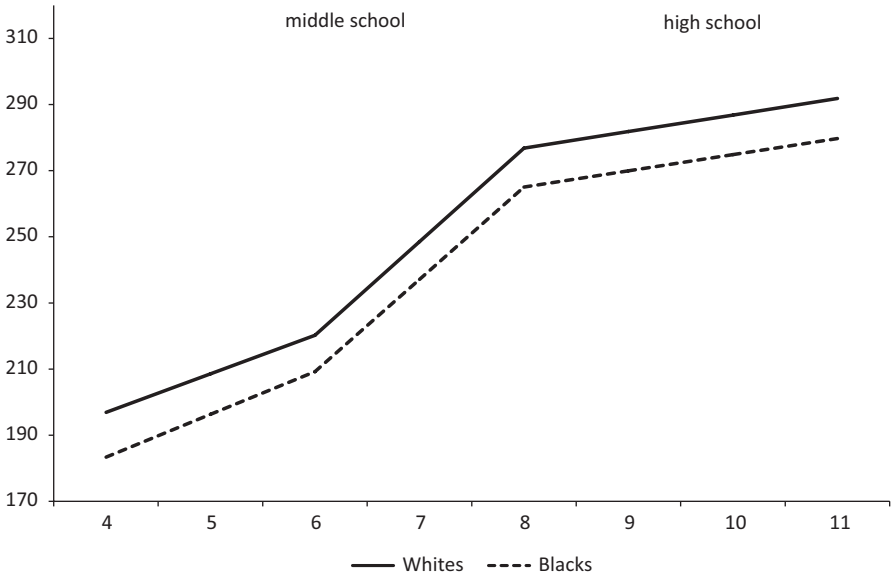


Fig. 7.18 Math Proficiency IRT scores by race and over schooling years. Data source: SARESP

A possible alternative explanation would be if teachers treat Black and White students differently, unfavoring the closing of preexisting gaps. We combine student-level data on standardized test scores with data on students' report cards in order to tackle this issue. We explore the fact that SARESP's grading is color-blind (relative to a child's phenotype), because it is done electronically, and that the state schools in Sao Paulo adopted a uniform criterion-referenced rule (grades must be an integer number between 0 and 10). The rationale for the empirical exercises performed here is to see whether White and Black students with the same blindly graded mathematics score (SARESP) receive different grades.

We perform these empirical exercises in two steps. At first, we identify the existence and robustness of the impact of race over the differences between nonblind (assigned by teachers) and blind measures of proficiency. Second, we go about investigating whether there is any detectable sign of such measures over observed student behavior. We investigate several alternative measures of proficiency and look at both cardinal and ordinal measures. The cardinal measure used is teachers' direct assessment (0–10 scale). The ordinal measures encompass an indicator for best performance in the classroom (achieving the maximum score within the classroom) and the percentile rank within the classroom.

The exercises for both cardinal and ordinal measures are conducted in a logical sequence, with gradual inclusion of controls that aim first at making the teachers' assessments and scores more similar (because teachers can assess writing ability in evaluations, whereas the test is multiple choice). We use scores in the SARESP writing sample to control for these effects. We then add demographic characteris-

tics that may explain racial differences (Blacks tend to be older). Finally, socioeconomic characteristics that may be correlated with race and may explain differences (e.g., personal appearance or interactions between parents and teachers) are added. Table 7.5 presents the results for teachers' assessment in mathematics. The introduction of controls reduces observed racial differences about 70 to 80 %, but a significant difference remains, suggesting that teachers do evaluate White students more favorably than their Black counterparts.

A possible explanation for this finding is that students' behavioral indicators are available to teachers during classroom interactions and may influence their assessment of a child's aptitude. Therefore, racial differences in class behavior could explain away the gap in Table 7.5. To address this issue, we consider alternative proxies for behavior in an attempt to check the sensibility of results. We explore information correlated with behavior from different sources, such as (1) teacher attendance records, assuming the students who miss more classes are the worst behaved even when attending (we used attendance in the first six school months), (2) physical education records of attendance and grades in the first six months of classes (because PE grades are under the responsibility of a different teacher and should basically reflect obedience in group activities, we consider this to be a strong predictor of behavioral problems), (3) self-reported absence in classes, and (4) history of school transfers and failures (going 2 years back), which should mostly reflect behavioral problems (considering the lenient rules for grade approval).

Table 7.6 presents our results. It reveals that the introduction of behavior controls seems to have no effect over the estimated racial differences, indicating that disparities in behavior are not driving the results. Our reading of these results is that there are still differences in assessments that are not explained by the controls included. This is, loosely speaking, an indication of discrimination within schools or that students are different in dimensions (observable by teachers) well beyond the ones we are capable of measuring.

Tables 7.7 and 7.8 present the patterns of discrimination we encounter when investigating ordinal measures. The ordinal effects are larger than the cardinal ones, representing 10–30 % of the original differences. The bottom line is that Blacks are less likely to be best in class and more likely to be underranked relative to Whites, reinforcing the evidence that teachers do treat Black and White students differently.

These results are particularly worrisome in a scenario where parents and children themselves update investment and effort decisions after extracting signals regarding scholastic abilities from report cards. Intraclassroom differentials would then feed back into the parental/individual decision process (Lundberg and Startz 1983; Coate and Loury 1993). In other words, if children's perceived ability increases the returns or reduces the costs of investments, or if a teacher's assessment influences key noncognitive aspects of a child's life (such as self-esteem, confidence, and motivation), this mechanism could reinforce racial gaps in the accumulation of human capital. Its impact would also depend on how labor markets are structured (based on the presence or absence of tournament-like contracts).

We conclude our empirical analysis on this matter with a glance at the impacts of biased grading on parental and child decisions related to the accumulation of

Table 7.5 Teachers' assessments gap in mathematics

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
5th grade	White	7,025,146						
		(0.011456)						
	Black	672,483	−0.300317	−0.235375	−0.092498	−0.075833	−0.069773	−0.062495
		(0.010329)	(0.009900)	(0.008684)	(0.006155)	(0.005563)	(0.005533)	(0.005511)
	Obs	206,799	206,799	206,799	206,799	206,799	206,799	206,799
7th grade	White	6.119520						
		(0.009405)						
	Black	5.733836	−0.385684	−0.322063	−0.163994	−0.133855	−0.120165	−0.104906
		(0.008554)	(0.008000)	(0.006995)	(0.005816)	(0.005630)	(0.005551)	(0.005528)
	Obs	302,687	302,687	302,687	302,687	302,687	302,687	302,687
9th grade	White	6,045,883						
		(0.009919)						
	Black	5,671,388	−0.374496	−0.313657	−0.186931	−0.124394	−0.099902	−0.087054
		(0.009259)	(0.008969)	(0.007857)	(0.007051)	(0.006778)	(0.006659)	(0.006652)
	Obs	266,816	266,816	266,816	266,816	266,816	266,816	266,816
	Controls							
	Classroom fixed-effects (FE)	–	–	Yes	Yes	Yes	Yes	Yes
	Proficiency scores	–	–	–	Yes	Yes	Yes	Yes
	Writing ability	–	–	–	–	Yes	Yes	Yes
	Demographics	–	–	–	–	–	Yes	Yes
	Socio-economic status (Ses)	–	–	–	–	–	–	Yes
	Teacher Accounts	–	–	–	–	–	–	–
	Physical Education	–	–	–	–	–	–	–
	Self-report absence	–	–	–	–	–	–	–
	History	–	–	–	–	–	–	–

Obs: Robust standard errors clustered at the classroom level are presented in parentheses

Table 7.6 Teachers' assessments gap in mathematics—behavior controls

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
5th grade	Gap	−0.062495	−0.069843	−0.062608	−0.062975	−0.062895	−0.065559	−0.062821
		(0.005511)	(0.005432)	(0.005356)	(0.005478)	(0.005508)	(0.005317)	(0.005356)
	Obs	206,799	206,799	206,799	206,799	206,799	206,799	206,799
7th grade	Gap	−0.104906	−0.110643	−0.110877	−0.107540	−0.105787	−0.110146	−0.110076
		(0.005528)	(0.005217)	(0.005179)	(0.005392)	(0.005427)	(0.005015)	(0.005131)
	Obs	302,687	302,687	302,687	302,687	302,687	302,687	302,687
9th grade	Gap	−0.087054	−0.096063	−0.109268	−0.092605	−0.069890	−0.089534	−0.089547
		(0.006652)	(0.006187)	(0.006109)	(0.006439)	(0.005957)	(0.005505)	(0.005615)
	Obs	266,816	266,816	266,816	266,816	266,816	266,816	266,816
12th grade	Gap	−0.078740	−0.083853	−0.100538	−0.079506	−0.072856	−0.090911	−0.093563
		(0.011102)	(0.010381)	(0.010525)	(0.010774)	(0.010777)	(0.009935)	(0.010260)
	Obs	73,785	73,785	73,785	73,785	73,785	73,785	73,785
Controls								
Classroom fixed-effects (FE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	FE
Proficiency scores	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Proficiency scores
Writing ability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Writing ability
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Demographics
Socio-economic status (Ses)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ses
Teacher Accounts	–	Yes	–	–	–	Yes	–	Teacher Accounts
Physical Education	–	–	Yes	–	–	Yes	Yes	Physical Education
Self-report absence	–	–	–	Yes	–	Yes	–	Self-report absence
History	–	–	–	–	Yes	Yes	Yes	History

Obs: Robust standard errors clustered at the classroom level are presented in parentheses

Table 7.7 Gap in the probability of being best-in-class in mathematics

		(1)	(2)	(3)	(4)
5th grade	White	0.18482			
		(0.002041)			
	Black	0.140972	−0.043848	−0.018976	−0.018614
		(0.001747)	(0.001920)	(0.001530)	(0.001535)
7th grade					
	White	0.103831			
		(0.001207)			
	Black	0.073270	−0.030561	−0.013719	−0.013617
		(0.001160)	(0.001166)	(0.001006)	(0.001011)
9th grade					
	White	0.102309			
		(0.001233)			
	Black	0.077895	−0.024414	−0.010302	−0.010365
		(0.001336)	(0.001265)	(0.001090)	(0.001097)
12th grade					
	White	0.113466			
		(0.002271)			
	Black	0.092004	−0.021462	−0.010385	−0.010688
		(0.002331)	(0.002398)	(0.002268)	(0.002280)
Controls					
Classroom fixed-effects (FE)		–	–	Yes	Yes
Proficiency scores		–	–	Yes	Yes
Writing ability		–	–	Yes	Yes
Demographics		–	–	Yes	Yes
Socio-economic status (Ses)		–	–	Yes	Yes
Teacher account		–	–	Yes	–
Physical Education		–	–	Yes	Yes
Self-report absences		–	–	Yes	–
History		–	–	Yes	Yes

Obs: Robust standard errors clustered at the classrom level are presented in parentheses

skills. We regress dropout rates, migration to private schools (search for quality), student satisfaction with the learning process, and motivation to learn mathematics against the cardinal and ordinal biases discussed above for fifth and ninth graders (end-of-cycle students). Grade inflation has implicit impacts on the automatic promotion policy. Yet, their impacts go beyond the promotion effect. Children who have their grade inflated above their actual proficiency are not affected in terms of dropout (even after conditioning on being promoted). The children are also not more satisfied with the learning process. Yet, underranking and underscoring seem to induce students to be less likely to migrate to a private school. In that sense, the overall impact of differential grading by teachers seems to have negative impacts over children's motivation and over the probability of investment in higher-quality private education.

Even though discriminatory behavior by teachers driven by taste cannot be ruled out as a source of explanation for our findings, statistical discrimination is also consistent with the results. In a school environment similar to the one suggested by

Table 7.8 Gap in within-class percentile rankings in math

		(1)	(2)	(3)	(4)
5th grade	White	0.509169			
		(0.000731)			
	Black	0.473094	−0.036075	−0.011097	−0.010652
		(0.000623)	(0.001293)	(0.000891)	(0.000898)
7th grade					
	White	0.512904			
		(0.000580)			
	Black	0.464474	−0.048430	−0.017631	−0.017609
		(0.000503)	(0.001040)	(0.000847)	(0.000867)
9th grade					
	White	0.508350			
		(0.000583)			
	Black	0.463386	−0.044963	−0.014336	−0.014336
		(0.000562)	(0.001106)	(0.000899)	(0.000918)
12th grade					
	White	0.492637			
		(0.000821)			
	Black	0.460244	−0.032392	−0.017562	−0.018021
		(0.001260)	(0.002021)	(0.001901)	(0.001957)
Controls					
Classroom fixed-effects (FE)		–	–	Yes	Yes
Proficiency scores		–	–	Yes	Yes
Writing ability		–	–	Yes	Yes
Demographics		–	–	Yes	Yes
Socio-economic status (Ses)		–	–	Yes	Yes
Teacher account		–	–	Yes	–
Physical Education		–	–	Yes	Yes
Self-report absences		–	–	Yes	–
History		–	–	Yes	Yes

Obs: Robust standard errors clustered at the classroom level are presented in parentheses

Aigner and Cain (1977), where well-intentioned teachers evaluate competence of their students based on proficiency examinations and on a catch-all noncognitive-abilities term, differential evaluation may still emerge due to relative imprecision in ability signals. As in Cornell and Welch (1996), this can be the case even when all individuals are rational and believe, correctly, that there are no average differences between people of various races in terms of true competence.

One should refrain from jumping, based on these findings, to the conclusion that teacher evaluations need to be replaced by system-wide standardized evaluations. It is important to consider that society may value schools' role in the formation of human capital that is not directly capitalized in terms of proficiency. Nonetheless, the results presented here indicate that education authorities should work toward improving screening methods. Possible interventions include addition of grading guidelines, teacher training, reduction of teacher turnover, fine-tuning of automatic-promotion schemes, direct (and possibly independent) evaluation of students' non-cognitive traits, and provision of student-level standardized test results to teachers.

Table 7.9 Proportion of Blacks outperforming Whites in ENADE, by pre-existing differences in ENEM scores

	Original gap in ENEM-2006 standard deviation units				
Exam section	0	10.0%	25.0%	35.0%	50.0%
Major-specific material	0.490 (0.464–0.516)	0.494 (0.475–0.513)	0.494 (0.479–0.510)	0.488 (0.474–0.502)	0.488 (0.475–0.501)
General examination	0.477 (0.451–0.504)	0.495 (0.476–0.514)	0.497 (0.481–0.512)	0.499 (0.485–0.513)	0.498 (0.486–0.511)
ENADE 2007—Total	0.496 (0.470–0.522)	0.502 (0.483–0.521)	0.504 (0.488–0.520)	0.498 (0.484–0.512)	0.498 (0.485–0.510)

In essence, we find that Black and White students get to the end of their basic education experience not only with different levels ofproficiency in mathematics but also receiving different signals (from their teachers) about their scholastic ability. A question remains: Can color-sighted policies undo what public schools seem to be doing to the generation and maintenance of racial gaps in educational attainment among their students?

Experimenting with Color-Sighted Policies

Racial inequality has been recently placed on the forefront of the Brazilian policy agenda. This led to current experimentation with affirmative action policies in tertiary education admissions or financing and in public-sector hiring. In 2002, the federal government created an official affirmative action program in the hiring for the public administration sector (Decreto Lei 4228/2002), and in 2003 (via Lei 10678/2003) it established a special secretary for the promotion of racial equality (Secretaria Especial de Politicas de Promocao da Igualdade Racial).

Despite the oddness of policies based on racial identification in a country with such a blurred concept of race, a growing number of colleges have been adopting a quota system in admissions. Brandao (2007) provided a detailed account of early (starting in 2001) adoption of a quota system by state and federal institutions in the states of Rio de Janeiro, Mato Grosso do Sul, Bahia, Parana, Mato Grosso, and Alagoas. Mostly, these are also combined with social quotas. Finally, in 2004, the federal government created the ProUni (College for All) program, which awards full or partial scholarships to low-income students who studied in tuition-free high schools (public or private) as its main college-attendance incentivization policy. Since its conception, ProUni has also reserved scholarships for Black students in a proportion corresponding to the Black population in each state of residence, as long as the socioeconomic requirements have also been fulfilled.

Given the dimension of the ProUni program, we see this as an opportunity to examine the characteristics of such affirmative action policies in Brazil. We focus attention on two main aspects in terms of efficiency: (1) static efficiency, the em-

pirical existence of efficiency loss in terms of college performance among those who had already finished high school, and (2) dynamic efficiency, the extent to which college admission policies influence high school enrollment, performance, and graduation rates of future generations. Whereas we tackle the first with existent data, we can only speculate about the second.

We know that Black and White Brazilians graduate from high schools with different levels of mastery of the school material. This happens even after we control for both family- and school-level characteristics, as we showed above. In principle, then, quotas in college admission would operate to give Blacks a similar chance of entry despite their underperformance in high school exit examinations. However, to what extent is their college education affected by the unfavorable background? Can the college operate to compensate Blacks and make them competitive at the labor market level (compared with their White counterparts)?

To answer these questions, we simulated the impact of quotas over individual college performance by employing longitudinal data on students who took the ENEM (high school material) and ENADE (college material) exams. Therefore, we studied a selected subsample of Blacks and Whites who entered college. We then compared the relative college performance of Whites and Blacks at different levels of high school proficiency gaps.

Table 7.9 presents the results of this exercise. We studied the percentage of pairs of students in which the Black student scored above the White student in the ENADE exam (with the 90% confidence interval presented underneath). This percentage is computed in different columns for pairs with different original difference high school performance (ENEM exam). That is to say, as we move from left to right, we see pairs of students in which the Black student was further behind his White counterpart. Differences in ENEM scores are set at 10, 25, 35, and 50% of one standard deviation in performance (equivalent to a variation of 13 percentage points in percentage of correct answers). Different lines in the table examine the performance in different sections of the ENADE exam, either with coverage of major-specific material (college content) or with coverage of high school material (general fundamentals).

We find that when interpreting quotas by their score-subsidy counterparts, no evidence of loss of efficiency in college performance is observed. This indicates that affirmative action in Brazil, at least considering this simple exercise, has the potential of compensating for the unfavorable background of Black students without compromising their performance in the first year of college activities. This is true in the two exam components that we examined and is prevalent even when considering large subsidies. In particular, bonus points equivalent to 0.25 standard deviations in the ENEM exam (which represents the same relative size of racial gaps in the SARESP exam at the end of high school) would not represent any detectable loss of efficiency in college performance.

How about the dynamic incentives set in motion by the of the quota policy? We see this as a clear challenge. If, on the one hand, by reducing costs of admission the policy can encourage Black students to not drop out of high school, on the other hand, it can discourage effort in the learning process. Of course, its net result will

depend on the fine-tuning of the quota system in place or on the amount of ENEM-score's subsidy they correspond to. More research on these dynamic impacts needs to be performed before any final conclusion about the success of such recent Brazilian affirmative action initiatives is reached.

Conclusions

In this chapter, we document the prevalence and extent of socioeconomic differentials between Black and White Brazilians. We then relate these outcomes to differences in the accumulation of human capital across races. Findings indicate that differences in both quantity and quality of formal education are pervasive. We uncover that recent trends in enrollment rates and in attrition reduction observed in some Brazilian states can generate reduced socioeconomic differences among future cohorts. Nonetheless, we also find worrisome evidence on the persistence of gaps in the quality of education provided to Blacks and Whites, as well as the possible gap-reinforcing role played by public elementary, middle, and high schools.

The recent Brazilian experience with color-sighted policies and affirmative action in college admissions is also discussed. We find no reason to believe that such policies lead to immediate loss of efficiency in college training, quite on the contrary. According to a simulation exercise, we have reasons to believe that even if awarded large admission test score subsidies, Blacks would not fall behind Whites while in college. Nonetheless, we still believe that more research is needed before reaching conclusions regarding incentives created by such policies for future generations of Black students.

Dynamic incentives may in fact be at the center of differences in proficiency observed when children start school. Are parents somehow feeding negative expectations regarding returns to investments in education of their children in their decisions? This would render a perverse self-fulfilling equilibrium that can be really hard to dismantle. Recent research on the investment decisions of mixed-race parents who have White-looking and Black-looking children in Brazil suggests that this can be the case.[15]

Finally, we have way less to say about informal mechanisms of discrimination and social segregation that may operate within Brazilian schools and reinforce differences in performance. Some version of the "acting White" phenomenon is likely at play in Brazil, but it is only by gathering more data on peer networks that we will be able to evaluate these hypotheses. This can be a fruitful avenue of research on Brazilian racial relations and achievement gaps' dynamics.

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[15] See Rangel (2008).

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