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Residential Segregation by Skin Color: Brazil Revisited

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This article examines residential segregation by skin color in forty of the largest metropolitan areas in Brazil, using census tract data from the 2010 Brazilian census. Residential dissimilarity among whites, browns, and blacks is moderate to low by US standards, and residential segregation correlates positively with socioeconomic status. By contrasting our findings with results from the 1980 Brazilian census, we observe that in thirty years, residential segregation decreased significantly in many metropolitan areas, particularly white-brown and brown-black dissimilarities. We speculate as to why these changes should have occurred.

Este artigo examina a segregação residencial por raça em quarenta das maiores áreas metropolitanas do Brasil, usando dados do setor censitário do censo Brasileiro de 2010. A dissimilaridade residencial entre brancos, pardos e negros é moderada a baixa pelos padrões dos EUA, e a segregação residencial se correlaciona positivamente com o status socioeconômico. Ao contrastar nossos resultados com o do censo Brasileiro de 1980, observamos que, em trinta anos, a segregação residencial diminuiu significativamente em muitas áreas metropolitanas, particularmente nas dissimilaridades branco-pardo e pardo-negro. Especulamos os motivos pela qual essas mudanças ocorreram.

Introduction

A quarter century ago, Edward Telles used a specially commissioned dataset from the Instituto Brasileiro de Geografia e Estatística (IBGE) to examine residential segregation by skin color in Brazil in 1980 (Telles 1992). He concluded that residential segregation among whites, browns (*pardos*), and blacks (*negros* or *morenos*) was only moderate by US standards. White-black dissimilarity was the highest, followed by brownblack, and then white-brown dissimilarity. Residential segregation was lowest for low-income groups and increased with increasing income level. For most of the white middle class, residential segregation was determined by the concentration of blacks and browns in low socioeconomic classes and in distinct regions of the country. Low-income urban areas and housing markets were strong predictors of overall residential segregation: segregation was significantly higher in urban areas with high occupational inequality, low mean income, high levels of housing turnover, and high homeownership.

In what follows we revisit and expand on Telles's conclusions using a comparable dataset for the year of 2010. We explore whether residential segregation by race has changed over the three decades spanning 1980–2010 in Brazil. Understanding residential segregation in Brazil is important, given the negative economic and social consequences for the residents of segregated enclaves. Blacks who live in segregated areas have lower access to educational opportunities and lower earnings than their counterparts in more integrated areas, which results in severe economic disadvantage.

Residential segregation has been extensively researched in the United States since the beginning of the twentieth century (Duncan 1957; Farley and Frey 1994; Harrison and Weinberg 1992; Lieberson 1980; Massey 1985, 1990, 2004; Massey and Hajnal 1995; Schneider and Logan 1982). Segregation between whites and blacks in particular has permeated sociological research and is front and central in discussions of

race relations in the United States. In Brazil, however, the study of residential segregation has been molded almost entirely by studies fostering the belief that it is social and educational differences among the lower and upper classes that determines residential patterns (Bailey 2009; Daniel 2006; Henriques 2001; Jaccoud and Beghin 2002; Silva 1994; Silva and Hasenbalg 1992; Telles and Bailey 2002; Telles and Lim 1998). Few studies have attempted to analyze how racial differences can contribute to residential segregation (Amaral 2013b; Torres and Bichir 2009; França 2010; Telles 1992).

Amaral (2013b) examined three metropolitan areas, Recife, Belo Horizonte, and Porto Alegre, analyzing segregation between whites and nonwhites (browns and blacks combined). He found that in areas where the majority of residents were white, a high proportion of the population held at least a high school degree. Nonwhites lived farther away from the core of the municipalities and tended to live in more elevated places with less public infrastructure than whites. Since data on individual census tracts was not available from the 2000 Census, Amaral relied on data provided by IBGE for selected areas by groups of census tracts (*áreas de ponderação*). However, using a larger geographical area to calculate residential racial segregation can result in lower dissimilarity indexes, thus deflating the actual segregation (Massey 2001).

Likewise, Torres and Bichir (2009) used the 2000 IBGE census for the metropolitan region of São Paulo and found that residential segregation was greatest among the poorest and the highest income levels—families earning 0 to 3 minimum wages compared to those earning 20 or more minimum wages. Similarly, França (2010) used the 2000 census to analyze residential segregation in the city of São Paulo, concluding that residential segregation is greater in the upper stratum of society. These studies are limited in scope due to the lack of census tract data that had been made available to Telles (1992).

In this article, we obtained from IBGE a special tabulation of the 2010 census tract data for forty metropolitan areas to examine changes in residential separation by race extending to the 1980–2010 period.¹ To provide context, we first discuss the relations of race, skin color, and socioeconomic status in Brazil, and the changes that may have occurred in these relationships during the last three decades. We then discuss details of the 2010 dataset and the method used to measure racial segregation, followed by the 1980–2010 comparative results for the major metropolitan areas and the results by socioeconomic groups. Finally, we draw together the main conclusions and our speculations about causes.

Understanding Race Relations in Brazil

Brazil is a multiracial society with an incongruent position on race relations. On the one hand, it has been argued that Brazil is a racial democracy in which intermixture of Native, African, and European descendants gave rise to an interracial society where racism is claimed to be nonexistent (Bastide and Fernandes 1955; Campos 2004; Freyre 1956; Wagley 1963). On the other hand, when analyzing Brazil's historical development, the true discriminatory nature of its social, cultural, political, and economic anatomy is revealed (Nascimento 1989). Historically, the white elite promoted the myth of racial democracy to conceal concrete forms of racial discrimination, oppression, and abuse (Skidmore 1993). In contrast to South Africa and the United States, Brazil never enacted segregation laws. As a result, the concept of race in Brazil is relative to other interracial systems. There is an overabundance of racial terms and their use is marked by high ambiguity (Harris 1964; Telles 2014; Valente 2017). Race is a fluid concept best described as a color spectrum, where in order for someone to be black one has to be at the darker end of the spectrum and self-identify as black.

There are two schools of thought regarding racial inequality in Brazil. Some advocate the thesis proposed by Donald Pierson, which denies the existence of racial discrimination, claiming that racial inequalities are in fact the result of class or social inequalities (Azevedo 1996; Frazier 1942; Harris 1964; Pierson 1945; Wagley 1963). This theory fails to address the continuing socioeconomic disparity among racial groups in Brazil. Opposing this view, Bastide and Fernandes (1955), Costa Pinto (1953), Nogueira (1985), and Cardoso and Ianni (1960) defend the position that there is significant racial discrimination in Brazil. An invaluable contribution to this debate is the work of Carlos Hasenbalg and his colleagues, which provides empirical evidence to explain inequalities in social mobility among racial groups in Brazil (Hasenbalg 1979). Their research led to the formulation of a theory on the cumulative racial disadvantage of Afro-Brazilians over their life cycle. The theory surmises that race is an additional factor superimposed on class. Hasenbalg and Silva (1999, 218) note that "nonwhites are subject to a 'process of cumulative disadvantages' in their social trajectories." For instance, from infancy, nonwhites have higher odds of being born poor and are more likely

¹ The census tract data containing the racial composition of the household can now be downloaded from the IBGE website: ftp://ftp.ibge.gov.br/Censos/Censo_Demografico_2010/Resultados_Gerais_da_Amostra/Microdados/.

to suffer poverty than whites, their odds of attending school is reduced, and when they do attend school, they attend public schools that are not as academically rigorous as the private institutions attended by white students. As a consequence, nonwhites are less likely to go to college. The resulting low educational achievement leads to low-paying jobs, mainly in the informal sector, making it impossible for them to compete and move up the socioeconomic ladder. This results in a vicious cycle perpetuating poverty among Afro-Brazilians.

More recently, many scholars have empirically examined and validated Hasenbalg's thesis (Hasenbalg and Silva 1988, 1999; Rosemberg 1990; Soares et al. 2005), most focusing on inequalities in the labor market and on the significant income disparity by race, ceteris paribus (Arias et al. 2005; Beltrão et al. 2003; Campante, Crespo, and Leite 2004; Hasenbalg 2006; Monk 2016). With the implementation of affirmative action law in federal universities in 2012, a few studies have focused on the pervasive racial inequality that afflicts the Brazilian educational system. These studies provide credence to affirmative action policies by showing that nonwhite students perform worse in university entrance exams than white students, even when controlling for family income, parents' education, and other socioeconomic status indicators (Heringer and Johnson 2016; Mitchell-Walthour 2015; Valente 2016, 2017). However, studies have shown that when given the opportunity, affirmative action students perform academically just as well as traditional students (Valente and Berry 2017). Despite this growing body of research, many Brazilians still defend the idea that racial disparities, even in the case of housing access, are the result of socioeconomic status, perpetuating the idea that racial inequality is a social issue and not a matter of racial discrimination (Fry 2007; Kamel 2006; Van den Berghe 2000). In reality, as a consequence of being trapped in a poverty cycle, nonwhites are forced to seek affordable housing far from urban centers, in areas characterized by the lack of basic infrastructure (energy, sewage, and water supply), in zones of precarious housing (favelas or shantytowns), and in many cases in illegal settlements (Torres and Bichir 2009).

Explanations of Racial Residential Segregation

The rapid growth of urban centers in the last decades in Brazil has resulted in an unprecedented migration of rural workers and small-city dwellers drawn to large cities in search of opportunities. Cities like São Paulo and Rio de Janeiro gained international acclaim and became important financial and industrial centers, providing not only essential infrastructure and technology but education and job opportunities lacking in the rural areas. The tremendous influx of low-skilled and uneducated residents also had adverse effects: available jobs were quickly taken and the labor market saturated, resulting in fewer opportunities, underemployment, and poverty for successive waves of immigrants. Many found residence in the sprawling slums and poor areas around the peripheries of the cities (*periferias*) (Davis 1996). Wealthier residents distanced themselves—physically and socially—from neighborhoods perceived as dangerous (Caldeira 2000). Most sought refuge in gated communities (*condomínios fechados*) which are very common in the larger metropolitan areas. Such protected spaces are reserved for those with greater purchasing power seeking better infrastructure, leisure, and security. As a result, inequality is manifested spatially in residential segregation. According to Graham and Marvin (2001), this "splintering urbanism" severely curtails poor residents' access to infrastructure, services, and utilities, and further lessens any efforts to incorporate them into the mainstream economy.

The stigma of poverty creates social and political disparities that result in segregation and uneven geographic development in urban areas (Auyero 1999; Harvey 2005; Perlman 2010). In a country were the majority of the poor (both urban and rural) are nonwhite, this segregation also is sharply divided along racial lines. In Brazil, residential segregation connotes an abhorrent and explicit system of racial division (Telles 2004). As scholars have shown time and time again, race is a significant and irreducible constituent of social structure and relations and an important factor in the production of social inequality (Guimarães 2002; Hasenbalg 1979; Hasenbalg and Silva 1988; Telles 2004, 2014; Valente 2016, 2017). As Nikole Hannah-Jones explains in the context of the US residential segregation,

housing is everything ... there is an understanding that where you live affects every aspect of the quality of life that you will have. When you take the group of people upon which [a] racial caste system was built and you separate them and you ghettoize them, then you can just deny them all of the normal services that anyone else would receive ... when you look at the effect of segregation on black folks, they're more likely to live in areas with toxic waste and environmental issues ..., in places where there are food deserts and no grocery stores. Their schools are the lowest-performing schools. They're less likely to have infrastructure and investment placed in their communities ...

transportation, all of the things that people look for when they want to move into a house when they have choice are often denied these communities. If you don't study race, it's actually kind of remarkable the extent to which black communities are intentionally segregated and then intentionally cast aside for things most take for granted." (National Public Radio 2018)

These observations are also pertinent to the Brazilian reality.

Theoretical Framework

There are three major theories, or frameworks, that can be used to understand why residential segregation occurs in Brazil and how it develops: assimilation, stratification, and resurgent ethnicity. The spacial assimilation framework is one of the earliest theories, positing that residential patterns are the result of economic, human, and capital accumulation or the lack thereof (Chung and Brown 2007; Gordon 1964; Iceland, Sharpe, and Steinmetz 2005; Massey 1985). Hence, segregation is a consequence of the differing socioeconomic status among racial groups that creates low assimilation of a minority group to the majority society (Massey 1985). This particular theory is heavily used to explain Brazilian residential segregation (Cardoso and Ianni 1960; Pierson 1939; Costa Pinto 1953; Vasconcelos 2004). One of the first definitions in the Brazilian literature of segregation was given by Roberto L. Corrêa in 1989. He defined segregation as the "spacial expression of social class." Corrêa claimed that segregation emerged due to "differences in each group's capabilities to pay for their residencies" (Corrêa 1989, 62). His term "socio-spacial segregation" has become a core idea in Brazilian urban studies. This underscores a reluctance to use the term "racial segregation" where in some instances it is claimed that a racial divide does not exist (cf. Vasconcelos 2004). For example, in the context Salvador, one of the blackest cities in Brazil, Pierson argued, "there is no deliberate segregation ... spatial distribution is largely the consequence of economic sifting" (Pierson 1939, 532). This unwillingness to acknowledge the existence and scope of racial residential segregation stems from the myth of racial democracy and the fact that the Brazilian government never implemented segregation laws. As has been shown, "in the case of racial inequality in Brazil, as compared to the United States and South Africa, the outstanding singularity is the absence of racial segregation by law and the accompanying national culture of 'racial democracy' that has acted as a smoke screen to mask very stark racial inequities" (Nascimento and Nascimento 2001, 106).

In contrast, the stratification theory posits that segregation emerges as a result of choices made for or against minority groups by majority groups because of their race or ethnicity (e.g., housing discrimination, racial stereotyping, and prejudicial preferences) (Chung and Brown 2007; Farley and Frey 1994; Logan and Molotch 2007; Yinger 1996). Surveys on racial attitudes in Brazil found that between 30 percent and 40 percent of whites said that they would not be willing to accept blacks or mulattoes as neighbors (Bastide and Fernandes 1955; Bastide and Van Den Berghe 1957; Cardoso and Ianni 1960). Therefore, nonwhites may experience blocked residential mobility and limited housing choice due to racial discrimination (Massey and Mullan 1984; Pager and Shepherd 2008). More recent studies suggest that housing discrimination and racial prejudice does play a role in residential segregation in Brazil (Telles 2003).

Finally, the resurgence of ethnicity theory attempts to explain why some ethnic groups self-segregate even after improvement in socioeconomic status (Chung and Brown 2007). It hypothesizes that racial minority preference in housing could be the result of in-group attraction. Ethnic communities are created due to cultural affinity or cohesion. Studies in Brazil, for example, have found that people of African origin in São Paulo and Rio de Janeiro tend to live in specific poor neighborhoods, close to other ethnic communities and Afro-Brazilian cultural, social, and religious institutions, such as capoeira and samba schools, and terreiros de candomblé (meeting places where the candomblé religion is practiced) (Rolnik 1989). This theory suggests that racial segregation may never be abated as racial cohesion regenerates segregation even when integration is socioeconomically feasible and housing discrimination has been receded (Charles 2005; Clark 2002; Krysan and Farley 2002). People residing in traditional ethnic communities who experience an increase in socioeconomic status sometimes choose to remain in their community or to move to another racial community commensurate with their income (Chung and Brown 2007).

Even though these theories provide different explanations to why residential segregation occurs, the Brazilian literature overwhelmingly uses assimilation theory to explain residential segregation. Only a few studies have analyzed racial segregation in Brazil in light of the stratification theory. Apart from socioeconomic status and ethnic preference, does racial discrimination play a role in residential segregation in Brazil? On this question, the Brazilian evidence has yet to be assembled, but analyzing trends in residential segregation between 1980 and 2010 may provide important insights.

Measuring Racial Residential Segregation

We measured racial residential segregation using the index of dissimilarity (Massey and Denton 1988), D, defined as the proportion of one group that would have to change census tracts to achieve the same spatial distribution as the other group (Massey and Denton 1988). When two racial groups are evenly distributed throughout the urban area, D = 0, and when there is complete segregation, D = 1. Thus, the index of dissimilarity has the following form:

$$D = \frac{1}{2} \sum_{i=1}^{n} \left| \frac{X_i}{X} - \frac{Y_i}{Y} \right|$$

where n is the number of tracts or spatial units, X and Y are the metropolitan area populations of the groups being compared, and i and i are their respective populations in census tract i. The data is sourced from the 2010 Brazilian Census produced by IBGE³ for the same set of thirty-five metropolitan areas used in Telles (1992), plus five additional metropolitan areas with populations over 350,000 thousand.⁴

The 2010 Census ensured that respondents had to choose between five race categories, white (branca), black (negra), brown (parda), yellow (amarela-Asian), and indigenous (indigena), and answers were only accepted if the responses were the same as the established categories. The main difference between how race was measured in the 1980 versus the 2010 Census is that in 1980, "indigenous" was included in the "parda" category. In 1980, "parda" was measured as a race/color that was "different than white, black and yellow, such as mulata, mestica, India, etc." (IBGE 1980a, 1980b). However, most indigenous people were concentrated in the central-west region, which Telles excluded from his 1980 analysis. Hence, the results are comparable.

Table 1 compiles the results of the calculations and compares them with those provided by Telles (1992).⁶ Segregation by race remains low and in most cases declined between 1980 and 2010.⁷ Feira de Santana, Porto Alegre, and Caixias do Sul have some of the highest levels of white-black segregation, while Itabuna, São Luis, and Macapá have some of the lowest. Thirty years ago, only Barra Mansa/Volta Redonda had what is considered a low level of residential segregation for whites versus blacks. Today, several metropolitan areas document low levels of segregation: thirteen have low levels of white-black segregation, twenty-eight of white-brown segregation, and thirty-four of brown-black segregation; all remaining indexes show moderate segregation. No metropolitan area showed high levels of segregation, in contrast to the results of 1980, where areas like Joinville, for example, had high segregation between browns and blacks (.624); today segregation between these groups is considered moderate (.348).

The mean segregation of whites versus blacks (.326) is slightly higher than that for whites versus browns (.262), a pattern observed in thirty-six of the forty metropolitan areas. In the remaining metropolitan areas, all located in the southeast, the white-black segregation index was lower than the brown-white index. White-black dissimilarity was the highest in all metropolitan areas in the north, northeast, central-west and south, and in twelve out of fifteen metropolitan areas in the southeast.

One of the benefits of using the dissimilarity index is that it can be consistently constructed with available census data over long periods of time and can be easily used to compare segregation levels across groups. Since Telles (1992) used the dissimilarity index for the same metropolitan areas in 1980, we can directly compare our results. This technique is employed by many other studies on segregation (see, for example, Amaral 2013b; França 2010; Massey and Denton 1988), although in some cases the census tract is not the unit of analysis (Amaral 2013b; França 2010).

³ This is the first census data available since 1980 containing the race of respondents at the census tract level. Datasets can be downloaded at ftp://ftp.ibge.gov.br/Censos/Censo_Demografico_2010/Resultados_Gerais_da_Amostra/Microdados/.

⁴ Telles (1992) excluded the north and central-west regions from his analysis because he was concerned with the number of indigenous people and their descendants in these areas in 1980. We chose to include these two regions because the number of indigenous groups in Brazil is extremely small (817,000 according to the 2010 IBGE census) and the majority of indigenous tribes reside outside of metropolitan areas.

⁵ The interviewers' instruction specifically stated: read the options of race or color to the respondent and register what is declared. In case the declaration does not correspond to one of the alternative in the questionnaire, reread the options to the respondent again so they can decide on the most appropriate response option (IBGE 2010b).

⁶ The main reason why we use the three categories white, brown, and black rather than white vs. nonwhite is because we want to analyze changes in segregation in the last thirty years since Telles's research, which used these three racial categories. We are well aware that "most existing papers model race with simple dummies for white, black, and so on, ignoring phenotypic heterogeneity within racial groups" (Francis and Tannuri-Pianto 2013, 734). As Monk (2016) explained, "by simply dividing the population into whites and nonwhites, researchers miss out on leveraging this phenotypic heterogeneity to estimate social inequality—ironically, in a society precisely where skin color is undeniably central in determining differential treatment and life chances due to its persistent usage as a key marker of ethnoracial division and thus, source of stigma" (Monk 2016, 425).

⁷ By convention, index values between 0 and .300 indicate low segregation, values between .300 and .600 indicate moderate segregation, and values between .600 and 1.00 indicate a high level of segregation (Massey and Denton 1993).

Table 1: Index of dissimilarity by metropolitan area, 2010 and 1980.

Regions and		201	10	1980*				
metropolitan areas	White vs. Black	White vs. Brown	Brown vs. Black	% White	White vs. Black	White vs. Brown	Brown vs. Black	% White
North	.287	.176	.277	25.66	_	_	_	_
1. Manaus	.341	.204	.340	25.36	_	_	_	_
2. Belém	.267	.179	.224	25.91	.495	.376	.431	27.1
3. Macapá	.254	.144	.266	25.72	_	_	_	_
Northeast	.323	.221	.265	30.41	.509	.405	.434	30.1
4. Recife	.308	.224	.246	37.54	.499	.389	.424	37.1
5. Salvador	.388	.297	.185	18.01	.534	.488	.353	22.8
6. Fortaleza	.350	.216	.333	33.91	.563	.409	.562	30.6
7. João Pessoa	.337	.216	.298	39.91	.541	.439	.482	33.0
8. Natal	.339	.220	.323	42.00	.596	.393	.585	47.2
9. Teresina	.290	.222	.244	24.20	.500	.486	.469	15.0
10. Maceio	.304	.197	.278	35.21	.495	.379	.450	36.5
11. Aracaju	.275	.197	.211	29.34	.467	.381	.398	27.0
12. São Luis	.283	.224	.240	27.76	.471	.362	.320	28.0
13. Feira de Santana	.377	.260	.243	17.05	.504	.409	.375	20.5
14. Campina Grande	.346	.176	.344	41.73	.468	.356	.444	45.0
15. Itabuna	.282	.206	.235	18.20	.488	.395	.343	21.1
Central-West	.292	.210	.223	35.6	_	_	_	_
16. Vale do Rio Cuiabá	.318	.248	.233	30.20	_	-	_	_
17. Goiânia	.306	.220	.219	44.09	_	_	_	_
18. Brasília	.251	.161	.216	32.51	_	_	_	_
Southeast	.328	.294	.207	56.09	.381	.367	.344	61.3
19. Rio de Janeiro	.349	.300	.180	45.95	.427	.383	.344	60.0
20. Belo Horizonte	.353	.287	.198	39.03	.419	.427	.341	54.1
21. Vitoria	.350	.278	.191	38.24	.455	.356	.371	48.6
22. Barra Mansa/ Volta Redonda	.292	.240	.174	52.23	.297	.318	.324	65.2
23. Juiz de Fora	.357	.280	.190	56.20	.364	.358	.327	71.1
24. Ipatinga	.297	.216	.223	37.63	.356	.396	.393	50.0
25. Uberlandia	.284	.238	.187	55.96	.381	.388	.363	75.5
26. Campos	.384	.279	.241	50.49	.346	.312	.319	66.0
27. São Paulo Capital	.357	.371	.221	60.65	.402	.380	.364	78.3
28. Santos	.340	.343	.190	57.11	.441	.424	.369	67.4
29. Campinas	.357	.342	.233	66.84	.429	.412	.359	78.6
30. São José dos Campos	.285	.277	.202	72.27	.370	.332	.389	80.1
31. Sorocaba	.284	.279	.219	71.62	.377	.305	.358	85.5

(Cont.)

Regions and		201	10		1980*				
metropolitan areas	White vs. Black	White vs. Brown	Brown vs. Black	% White	White vs. Black	White vs. Brown	Brown vs. Black	% White	
32. Ribeirão Preto	.336	.344	.214	65.72	.406	.387	.337	82.1	
33. Jundiai	.298	.331	.241	71.45	.378	.405	.369	83.0	
South	.359	.324	.274	80.74	.467	.433	.476	86.4	
34. Porto Alegre	.387	.343	.271	82.58	.422	.407	.421	85.3	
35. Curitiba	.324	.308	.260	74.86	.477	.417	.467	84.1	
36. Pelotas-Rio Grande	.360	.340	.217	82.71	.386	.352	.440	84.6	
37. Florianópolis	.363	.314	.292	85.54	.461	.492	.516	91.8	
38. Londrina	.333	.287	.229	68.67	.449	.397	.404	74.3	
39. Joinville	.346	.309	.348	85.23	.526	.470	.624	95.2	
40. Caxias do Sul	.398	.367	.301	85.60	.546	.495	.457	89.2	
Mean	.326	.262	.243	48.88	.450	.397	.407	58.1	

^{*} Data from Telles (1992).

The mean index of brown-black segregation remains the lowest overall, although it has decreased since 1980 from .407 to .243. The brown-black index was the lowest of the three indexes in twenty-four metropolitan areas, particularly in the south and southeast. This shows a significant shift from 1980, when only sixteen metropolitan areas had a low index in the brown-black category. Overall, residential segregation has decreased in most metropolitan areas.

The comparative results for 1980 and 2010 become clear if the index values are plotted against each other in three graphs (**Figures 1–3**), for white-black, white-brown, and brown-black dissimilarities.⁸ In **Figure 1**, most points lie above the diagonal line. Data points above the diagonal line indicate a reduction in the dissimilarity index, points below show an increase, and points on the diagonal line indicate when the 1980 and 2010 indexes are the same. Virtually all the points lie above the line, indicating widespread reductions in white-black residential separation. The most pronounced increase in separation was in Campos in the southeast; the greatest decreases were in northeastern cities such as Natal (8) and Fortaleza (6); and two cities maintained almost the same level of white-black segregation, Juiz de Fora (23) and Barra Mansa/Volta Redonda (22).

A similar pattern is seen in white-brown separation (**Figure 2**), except in Ribeirão Preto (32), Sorocaba (31), and Campos (26) in the southeast region, where we observe a slight decrease in levels of white-brown segregation. Some of the highest reductions occurred in southern cities, particularly in Caxias do Sul (40), Florianópolis (37), and Joinville (39), and in Teresina (9) in the Northeast. Brown-black segregation decreased significantly in metropolitan areas such as Joinville (39) and Florianópolis (37) in the South, and in Natal (8) and Fortaleza (6) in the Northeast, as shown in **Figure 3**.

The reduction in the number of self-identified whites in the forty metropolitan areas, from 58.1 percent in 1980 to 48.88 percent in 2010, reflect the overall decline of self-identification as white in the Brazilian population in recent decades. Between 1872 and 1940 (see **Table 2**), the proportion of whites in the Brazilian population increased drastically because of a mass influx of European immigrants, accentuated by whitening policies. Many argue that this was driven by the belief that Brazil would only become a civilized society through the *branqueamento* or whitening of its population (Andrews 1996; Camargo 2010; Loveman 2009; Skidmore 1976). During the 1950s and 1960s, the reduction in European immigration, miscegenation, and high fertility rates among nonwhites gave rise to a mixed, browner population (Telles 2015). In recent decades, there have been many campaigns, promoted by Black Movement organizations, encouraging Afro-descendants to embrace their heritage and to identify as nonwhites in the census, as opposed to a lighter, *embranquecida* version of themselves (Anjos 2013; Marx 1998; Winant 1992). With the creation

⁸ Today the majority of Brazilians identity as nonwhite (brown or black). The terms *pardo* and *mulato* are used interchangeably to connote someone of mixed ethnicity. *Pardo* is the official category used by IBGE to identify those who are a mixture of white, black, and indigenous. Although many Brazilians have indigenous ancestry, the majority do not have a connection with any indigenous groups. Given the complex racial classification in Brazil, race is ascertained through self-identification.

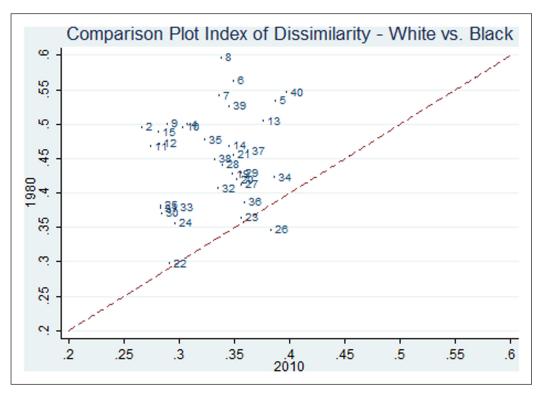


Figure 1: Levels of white-black dissimilarity in 1980 and 2010 in thirty-five Brazilian metropolitan areas. Numbers refer to the list of cities in Table 1. Above the dotted line, dissimilarity was higher in 1980 than in 2010. Only one area showed increasing segregation, Campos (26), and two areas remained constant, Juiz de Fora (23) and Barra Mansa/Volta Redonda (22); all three areas are located in the southeast. The greatest reductions in segregation occurred in Natal (8) and Fortaleza (6) in the northeast.

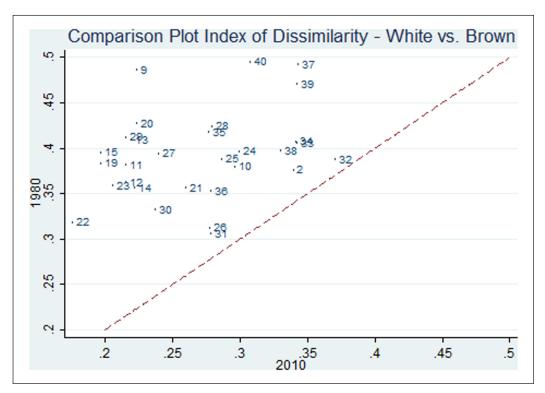


Figure 2: Levels of white-brown dissimilarity in 1980 and 2010 in thirty-five Brazilian metropolitan areas. Above the dotted line, dissimilarity was higher in 1980 than in 2010. Segregation reduced for all areas, particularly in Caxias do Sul (40), Florianopolis (37), Joinville (39), and Teresina (9).

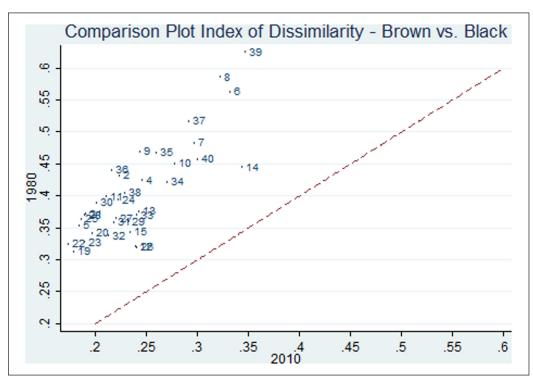


Figure 3: Levels of brown-black dissimilarity in 1980 and 2010 in thirty-five Brazilian metropolitan areas. Above the dotted line, dissimilarity was higher in 1980 than in 2010. All metropolitan areas showed reduced segregation. The greatest reductions in segregation occurred in Joinville (39) in the south and Natal (8) and Fortaleza (6) in the northeast.

Table 2: Distribution of total population % by racial groups.

Race	1872	1890	1940	1950	1960	1980	1991	2000	2010
White	38.1	44.0	63.5	61.7	61.0	54.2	51.6	53.7	48.7
Brown	42.9	41.4	21.2	26.5	29.5	38.8	42.6	38.9	41.6
Black	19.7	14.5	14.6	11.0	8.7	5.9	5.0	6.2	8.2

Sources: Camargo (2010); IBGE (2010); Wood, Carvalho, and Horta (2010). Note: The race question was not included in the 1920 and 1970 census.

of the Secretaria de Promoção de Políticas de Igualdade Racial (Ministry for the Promotion of Equal Racial Policies) in 2003, a surge in activism among the Black Movement permeating political parties, universities, and state/federal institutions, combined with the recent implementation of affirmative action policies in Brazil (Mitchell-Walthour 2015), helped shape Afro-Brazilian racial identity and to some extent propelled many to acknowledge their mixed heritage. The sharp drop in the percentage of whites in Brazilian society seems to stem from this growth in racial consciousness, resulting in significant shifts in the way people perceive race and link their racial identity to African roots over time.

Socioeconomic Segregation

To account for the effects of social class on residential segregation, we separated racial groups by household income level and calculated dissimilarity indexes for white-black, white-brown, and brown-black. By dividing the groups into income categories the sample size was reduced significantly. One issue that arises when measuring residential segregation using the dissimilarity index is that the measure can be biased

⁹ Telles (1992) proposed that socioeconomic segregation should be analyzed by measuring blacks, browns, and whites in the same social stratum. A significant literature documents racial identification changes as individuals move up the socioeconomic ladder (Schwartzman 2007). This strategy was also employed by Rios Neto and Riani (2007) who analyzed the segregation levels in the municipality of Belo Horizonte by income and educational levels.

upward when the group of interest is small (Carrington and Troske 1997; Winship 1977). To mitigate this problem we only included in our analysis data for groups that had at least twice as many group members as census tracts. As a result, for some income groups, particularly the highest, indexes could not be calculated because there were not sufficient blacks, and in some cases browns, in those categories. This was actually the case for the majority of metropolitan areas (thirty-one out of thirty-six) revealing a concentration of nonwhites in the low-income categories. This indicates that residential segregation of whites is essentially guaranteed by the absence of significant nonwhite middle and upper classes.

Table 3 compares our results with the seven metropolitan areas analyzed by income in 1980. In thirty years, segregation has decreased significantly for all income groups. In most areas, for 1980 and 2010, there is a pronounced increase in segregation as income increases. In Belo Horizonte this pattern is very distinct; there is little racial segregation among the poorest groups but as income increases, so do segregation levels. We observe high segregation among those in the highest income brackets, particularly for whites versus blacks (.411). We uncover similar patterns throughout most metropolitan areas listed in the online appendix (refer to the supplemental material). Segregation is higher among high-income households where housing options are greater. This suggests that racial segregation may not be a function of income differences in these areas, as many would like to claim. Moderate segregation persists regardless of income, as observed when analyzing the results for the combined index, which shows the indexes for the combined dataset of all areas merged together by income categories (refer to Table 10 in the online appendix). Twenty-five out of thirty-eight metropolitan areas have low to moderate segregation—low among the poorest categories, and

Table 3: Index of dissimilarity for specific cities by income group, 2010 and 1980.

Metropolitan areas and income		2010		1980*			
group (number of minimum wages)	White vs. Black	White vs. Brown	Brown vs. Black	White vs. Black	White vs. Brown	Brown vs. Black	
Salvador**							
less than 1	.051	.062	.030	_	_	_	
1 to 2	.155	.137	.032	.519	.499	.391	
2 to 3	.293	.197	.102	.547	.519	.411	
3 to 5	.332	.189	.148	.547	.511	.418	
5 to 10	.326	.149	.180	.618	.497	.483	
more than 10	.276	.103	.173	_	.509	_	
Feira de Santana							
less than 1	.153	.093	.078	_	_	_	
1 to 2	.169	.085	.098	.514	.468	.348	
2 to 3	.203	.119	.120	.572	.464	.439	
3 to 5	.221	.104	.151	.585	.481	.445	
5 to 10	.288	.136	.202	.615	.465	.549	
more than 10	_	.135	_	_	.518	_	
Rio de Janeiro							
less than 1	.138	.124	.093	_	_	_	
1 to 2	.166	.167	.075	.419	.382	.399	
2 to 3	.253	.225	.076	.456	.389	.424	
3 to 5	.326	.269	.094	.452	.387	.409	
5 to 10	.374	.287	.120	.513	.421	.479	
more than 10	.349	.259	.135	_	.546	_	

(Contd.)

Here we follow a suggestion by Douglas Massey, who acknowledges that there is no accepted cutoff, and that typically researchers only calculate the dissimilarity indexes if there is at least twice as many groups members as census tracts.

Metropolitan areas and income		2010		1980*			
group (number of minimum wages)	White vs. Black	White vs. Brown	Brown vs. Black	White vs. Black	White vs. Brown	Brown vs. Black	
Belo Horizonte							
less than 1	.225	.177	.101	_	_	_	
1 to 2	.268	.198	.109	.435	.412	.405	
2 to 3	.339	.233	.156	.450	.419	.437	
3 to 5	.373	.248	.177	.462	.416	.450	
5 to 10	.411	.262	.210	.568	.454	.518	
more than 10	_	.267	_	_	.554	_	
Barra Mansa/Volta Redonda							
less than 1	.162	.128	.102	_	_	_	
1 to 2	.194	.154	.112	.355	.387	.423	
2 to 3	.266	.198	.155	.360	.358	.406	
3 to 5	.332	.246	.214	.377	.362	.422	
5 to 10	_	.278	_	.421	.361	.439	
more than 10	_	_	_	_	.549	_	
Juiz de Fora							
less than 1	.200	.133	.108	_	_	_	
1 to 2	.249	.185	.114	.318	.337	.337	
2 to 3	.345	.230	.161	.380	.415	.408	
3 to 5	.392	.240	.216	.410	.436	.449	
5 to 10	.336	.222	.237	.568	.465	.556	
more than 10	_	.279	_	_	_	_	
Campos							
less than 1	.227	.166	.111	_	_	_	
1 to 2	.268	.198	.150	.377	.335	.376	
2 to 3	.313	.209	.199	.411	.374	.451	
3 to 5	.321	.202	.221	.448	.384	.461	
5 to 10	_	.212	_	.618	.450	.604	
more than 10	_	.236	_	_	_	_	

^{*} Data from Telles (1992); the maximum income category in 1980 was 10 to 20 minimum wages, in the 2010 census this category is "more than 10 minimum wages."

moderate among the highest. These findings provide credence that in Brazil, the stratification theory can and should be used to understand residential segregation.

Discussion

Our analysis shows that residential segregation in Brazil has decreased in the thirty years from 1980 to 2010. Nonetheless, even when controlling for income categories, dissimilarity indexes remain low to moderate throughout. Why should this be?

Internal migration has been responsible for the rapid urbanization of Brazilian metropolitan areas in the last decades. From 1980 to 2010, Brazil's urban population grew from 67.70 to 84.40 percent of the total population (Amaral 2013a; IBGE 2010a). This migration is typically attributed to the poverty and lack of

^{**} Data for Salvador were only available at the subdistrict level; the remaining cities' dissimilarity index was calculated at the neighborhood (*bairros*) level.

opportunities in the northeast region combined with a concentration of industries and job opportunities in the southeast, particularly in the state of São Paulo (Amaral 2008). An important feature of this process is that migrants from the northeast tend to be nonwhite (mostly brown) and women (Amaral 2013a). As increasingly more people move to the cities, limited housing spaces result in crowded, low-income areas. The predominantly white upper classes continue to segregate themselves, while the middle and lower classes have experienced the most significant decline in racial segregation, particularly white-black and white-brown segregation. Thus, the Afro-Brazilian middle class is becoming more spatially similar to middle-class whites than rich Afro-Brazilians are to rich whites. The low racial segregation among the poorest urban groups in Salvador, Feira de Santana, and Rio de Janeiro, for example, posits that the extremely limited residential choices make race irrelevant when choosing housing. Families who earn less than the minimum wage live in very precarious conditions, often in illegal settlements, where they are deprived of any choice. Racial segregation is therefore more likely to happen at the highest income levels, where an array of housing options is available and race can become a criterion in neighborhood selection.

The majority of the metropolitan areas have displayed higher levels of brown-black segregation in comparison to white-brown segregation. Coincidentally, studies have shown that in recent years, marriage between whites and browns has increased significantly, particularly in comparison to marriage between pardos and negros (Ribeiro and Silva, 2009). The odds of whites and pardos getting married increased from .135 in 1960 to .239 in 1980, and to .411 in 2000, and the proximity between whites and pardos was significantly greater than that of pardos and negros. Given that marriage is, in general, an intimate and long-lasting relationship, the type of intermarriage—race, nationality, religion, socioeconomic status, and so on—can be used as a measure of barriers that separate racial groups, as well as of mutual acceptance of members of these groups (Ribeiro and Silva 2009). This would certainly contribute to the reduction of segregation between whites-browns, as observed in this study.

Another possible explanation for the decline of white-brown residential segregation levels comes from the extensive literature on anti-blackness in Brazil (Alves 2018; Ribeiro and Silva 2009; Hordge-Freeman 2015; Mitchell 2010; Nogueira 2008; Nolen 2015; Roth-Gordon 2017; Sheriff 2001; Telles 2014; Twine 1998). Pardos motivated by an ideology that promotes whitening are moving closer to white neighborhoods, marrying white partners, and are distancing themselves from blacks. Many blacks or browns (morenos or pardos) in Brazil do not identify with their African heritage and even discriminate against family members who have darker skin color and noticeable African phenotype, whom they perceive to be black (Hordge-Freeman 2015). As Alves (2018) noted, as expected for a society organized around anti-blackness, other nonwhite individuals participated in anti-blackness politics. Some of them could unambiguously fall into the 'negro' category of the complex schema of racial classifications in Brazil, but would deny their blackness" (Alves 2018, 90). Similarly, Roth-Gordon (2017, 131) stated that, "within Brazilian racial ideology, the practice of embranquecimento emphasizes the inferiority and undesirability of blackness as the nation, families, and individuals needed to racially improve through their connections with whiter people and the acquisition of 'whiter behaviors.'"

Although our findings demonstrate that segregation by race or income is decreasing, the indexes still show an overwhelmingly moderate racial segregation for the majority of metropolitan areas analyzed; after thirty years, residential segregation in Brazil can still be characterized as low to moderate. These results carry important implications for social theory: although socioeconomic status does not account for the residential segregation observed in Brazilian metropolitan areas, as suggested by some studies (cf. Corrêa 1989; Costa Pinto 1953; Vasconcelos 2004), these segregation levels contribute to the general perception that race is not important in determining life chances and perpetuates an ideology that denies racism. Yet, as seen in **Table 3** and in the online appendix, residential segregation among racial groups still occur among members of the same income group, particularly white-black segregation.

Future research on racial segregation in Brazil should consider analyzing racial segregation in a smaller scale. Recent studies using new quantitative indices of residential segregation that operate at the level of streets and next-door neighbors have shown that traditional measures of racial segregation can obscure

Hordge-Freeman (2015) provides hundreds of interviews that capture and document this unfortunate reality among mixed-families in Brazil. This phenomenon is not exclusively manifested by morenos or pardos but by Brazilians in general. As Marcelo Paixão stated in an interview, "The dominant idea, propagated by whites in Brazil, and eventually accepted by many black and mixed-race people as well, was that the white part of the mix brought a European rationality, while Africans brought happiness and creativity, a positive outlook. The more white that one was, the more of the 'valuable' characteristics one had. To be whiter was to have a better chance of getting a job, and of earning more in that job. To be whiter, in other words, was to have it easier. Brazil became what is sometimes called a 'pigmentocracy'" (Nolen 2015).

a substantial amount of within-district segregation (Grigoryeva and Ruef 2015; Logan and Parman 2017). Using a smaller geographical scale will probably reveal a more augmented level of racial segregation than what we observed, particularly in places like Rio de Janeiro and São Paulo, where nonwhite and white neighborhoods abut each other, as illustrated in **Figure 4**.

In many metropolitan areas, favelas (shantytowns), predominantly occupied by brown and black residents, are located alongside some of the most expensive real estate in Brazil. For example, **Figure 5** exposes the racial distribution in the affluent districts of Morumbi and Vila Andrade in the city of São Paulo. Although the unit of analysis used to draw this map are census tracts, we can clearly observe that these two districts are predominantly white, and that browns and blacks are concentrated in a few areas, such as the Paraisópolis favela (the large green conglomerate in the left side of the map), the favela Real Parque in the right side of the map, and the Jardim Panorama favela, located above the Real Parque favela (Gusmão, 2015a).

The same pattern emerges when examining Rio de Janeiro. The most prestigious neighborhoods in the south of Rio (Copacabana, Ipanema, Leme, Leblon, Gávea, Jardim Botânico, and Lagoa) are located along the beaches, where housing prices are the most expensive and residents are predominantly white, while blacks and browns are clustered together in poor neighborhoods and shantytowns clearly observable in **Figure 6**.

Conclusion

In recent years, there has been a fair amount of debate about the extent to which US race relations and segregation patterns have come to resemble those of Latin America (e.g., Bonilla-Silva and Glover 2004; Sue 2009). The lower mean for residential segregation in 2010 across all dyadic comparison groups (white-black, white-brown, brown-black) might suggest that the racial pattern of housing in Brazil has become more fluid over the last couple of decades, while US residential segregation is still relatively high by comparison. At the same time, the substantial levels of segregation between whites and residents of color in the high-income areas of cities such as Rio de Janeiro and Belo Horizonte could be an indication that American-style segregation is taking root in some pockets of Brazilian society. In addition, studies of Latino segregation in the United States also find differences by race that parallel those observed in Brazil, with segregation between white Latinos and non-Hispanic whites being relatively low, segregation between black Latinos and non-Hispanic whites being quite high, and segregation between mixed-race Latinos and non-Hispanic whites falling in-between (Iceland and Nelson 2008; Iceland and Wilkes 2006).



Figure 4: Paraisópolis shantytown in São Paulo, bordering the affluent Morumbi neighborhood. Photo by Tuca Vieira.

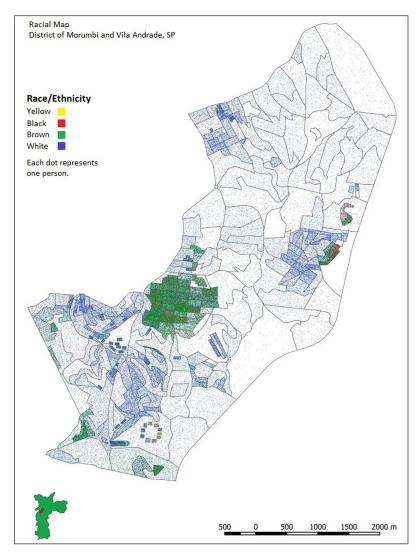


Figure 5: Racial map, district of Morumbi and Vila Andrade. Data source: IBGE 2010. Map created by Hugo N. Barbosa de Gusmão (2015a).

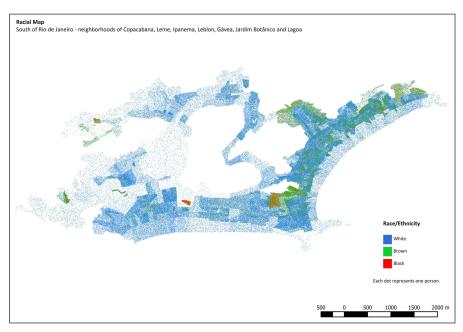


Figure 6: Racial map, neighboorhoods in the south zone of Rio de Janeiro. Data source: IBGE 2010. Map created by Hugo N. Barbosa de Gusmão (2015b).

This article provides evidence of a significant move toward racial equality and possible abatement in housing discrimination. However, despite the decline in racial segregation in recent decades, residential integration may not be sufficient to facilitate structural assimilation in political, economic, and educational domains. Grave disparities in income, educational achievement, labor force participation, and political representation between blacks and whites remain prevalent in the Brazilian society. While the findings in this study are encouraging, it remains to be seen whether residential gains can continue in years to come, and can facilitate other forms of structural integration.

Additional File

The additional file for this article can be found as follows:

· Appendix. [[Description]]. DOI: https://doi.org/10.25222/larr.83.s1

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