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Occupational Segregation by Race and Sex in Brazil, 1989-2001

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Abstract:

Race and sex differentials in labor market outcomes in Brazil appear substantial, phenomena often tied to occupational segregation. This paper presents an array of Duncan indices of dissimilarity to investigate the magnitude and contours of occupational differentiation in Brazil, as well as changes in the recent past, constructed from Pesquisa Nacional por Amostra de Domicílios (PNAD) microdata for 1989 and 2001. Findings include the facts that measurable occupational differentiation by sex is over twice as high as that by race and that differentiation on both counts is highest among people 35 and older and outside the Northeastern region. Occupational differentiation by race appears comparable among women and men, but may be higher among women if accurately measured. Racial differentiation grows with education, while sexual segregation declines. Differentiation has declined modestly since 1989 in almost all categories except by race among younger people, men and the most educated.

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Racial inequality, the “American dilemma” and a central preoccupation for scholars of the U.S., has only emerged relatively recently as an important topic for Brazilian researchers and policy makers¹. Brazilian racial dynamics were obscured for years by the early 20th century perceptions that Brazil was a “racial democracy,” or a nation that was whitening through inter-marriage and immigration, and the discouragement of critical attention during the years of dictatorship, 1964-1986 (Hanchard 1999). Additionally, some resist what they feel is an understanding of race shaped by and more appropriate to the experience of the United States (Telles 2002, Nobles 2002).

Scholarship on race in Brazil in the last twenty years has been galvanized by the examination of quantitative data that clearly manifest racial disparities in income and education (Nobles 2002). Qualitative scholarship reveals a society that doesn’t recognize itself as racist, attributing racial inequality to class, behavioral, intelligence and cultural differences while simultaneously denigrating and distancing “blackness” (Twine 1998). Not surprisingly, scholarship that examines multiple systems, or the intersection of axes of identity including gender and class—underdeveloped in economics generally—is particularly sparse for Brazil, with a few notable exceptions (Oliveira 2002; Lovell 1999).

This paper presents measures of occupational segregation by both race and sex in Brazil, based on the Pesquisa Nacional por Amostra de Domicílios (PNAD) microdata for 1989 and 2001. This is a large, nationally representative dataset, available on an annual basis, that includes a large number of demographic and employment-related variables.

Historical analyses of these topics are severely constrained by data availability. According to Melissa Nobles (2002), “for most of the twentieth century, the IBGE [the Brazilian agency responsible for the Census and other data gathering] had not cross-

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tabulated color categories with socioeconomic indicators;” the 1960 census data related to color were released late and only partially, while the question about color was removed from the 1970 census. This paper reports on an investigation based on the 1989 and 2001 PNAD datasets, for a view of constancy and change in occupational segregation by race and sex in Brazil in recent years.¹

The measure used to assess the degree of occupational concentration is the Duncan dissimilarity index. This index is the standard, but by no means only available, index for measuring occupational differentiation between populations. Its strengths—including its intuitive interpretation and the comparisons possible due to its widespread use—justify its retention as the workhorse of the occupational segregation literature.²

For the purposes of this analysis, race will be understood in a relatively American sense, as a dichotomy between whites, or people of European descent, and blacks, or people of African descent. Recent scholarship of race relations in Brazil (e.g. Hanchard 1999) is indicating that a binary racial understanding may be more accurate for Brazil than has been commonly believed. Much was made of Brazil’s “racial democracy” and the alleged contrast between the continuum of racial identities purportedly operating in Brazil and the rigid, dualistic racial distinction made in the United States. However, as social science research has progressed in recent years, scholars such as Edward Telles (1999, pp. 85-86) are finding that “in terms of income, blacks and brown are structurally very similar, and both are quite distinct from whites in Brazil, implying more of a caste for the African-origin population in Brazil, while racial differences in the United States better resemble a color continuum.” For this reason, this paper will follow the practice of Oliveira (2002) and others, combining the racial classifications of pardo (brown or

mixed-race) and preto (or black) into one, which I will call black or Afro-Brazilian, as contrasted with branco, meaning white or Euro-Brazilian. Individuals classified as amarilla—yellow or Asian—and indigena, or indigenous, are omitted from most of the discussion and analysis due to their very small numbers.

Race and Sex in the Brazilian Labor Market

Afro-Brazilians comprise the largest concentration of Africans in the New World, and a sizeable proportion of the Brazilian population. Brazil's 2000 Census revealed the population of 170 million to be 54 percent white (branco), 38 percent mixed-race (pardo/brown), 6 percent black (preto), 0.5 percent Asian, 0.4 percent indigenous, with 1.7 percent of respondents electing not to declare their color, or "cor," the Brazilian census variable (*The Economist*, 7/5/03).

Clearly, racial distinctions are a contentious issue in Brazil, and have been defined in terms of color and phenotype, rather than as traceable African ancestry, as in the United States. Brazilians from both the right and left have downplayed the influence of race, the right claiming that racial mixing precluded the possibility of race discrimination and the left emphasizing class distinctions as far more important (Nobels 2002, Hanchard 1999). However, in both the U.S. and Brazil, "the idea of race has been a central organizing principle of political, economic, and social life (Nobels 2002, p. 300). The truth of this assertion for Brazil has become obvious in social science scholarship of the last twenty years. For instance, work published as early as 1985 by Carlos Hasenbalg showed significant discrepancies in the educations, occupations and earnings of blacks and

whites, and that people of mixed race experienced outcomes more similar to blacks than to those of whites (Nobles 2002)

Peggy Lovell's (1999) analysis of the 1960 and 1980 Brazilian census data shows that during the 1960s and 1970s both white and Afro-Brazilian women made substantial gains in educational levels, occupational attainment and real wages, but were unable to close any part of either the substantial wage gap between themselves and or with men.

Whereas only 18 percent of white women in 1960 had nine or more years of education, 47% did by 1980, and the proportion with fewer than five years of education fell from 65% to 35%. At the same time the proportion of Afro-Brazilian women with 9 or more years of education rose from 3 to 22%, and the group with less than five years of education fell from 93 to 69% (Lovell 1999, p. 142).

These educational gains were reflected by a shift from blue to white collar occupations, so that by 1980 63 % of white women and 34% of Afro-Brazilian were in white-collar occupations, though with very few of either race in managerial ranks(Lovell 1999, p. 144). The most remarkable movements were the reduction of black women in domestic service from 68% of employed Afro-Brazilian women in urban Brazil to 37%-- while the representation of white women in this category fell from 28 percent to 15 percent--and the increased representation of black women in clerical jobs from 4 percent to 18 percent, and in professional and technical positions from 8 to 14 percent (Lovell 1999, p. 144)

The sizeable shift of black women out of domestic work resulted in black women's wages in blue collar categories rising from 60 to 84 percent of white women's through the 1960s and 1970s, while holding at very close to two-thirds of white women's in white

collar occupations (Lovell 1999, p. 146). Interestingly, the biggest movement of black women out of domestic work and into clerical work is coincident with lagging clerical wages. Of seven aggregated occupational categories, black and white women experienced between 24 and 100 percent real wage growth in all categories between 1960 and 1980, with the exceptions of white women in clerical work, black women in clerical work and white women in “other personal service” work, for whom real wage growth was 3%, 0% and 14% respectively (Lovell 1999, p. 146)

Surprisingly, given the differences between the two economies, black women in the United States made the shift out of domestic work into clerical employment during the same decades, the 1960s especially. King (1993) ascribed this transition in the United States to a relative shortage of white women available to an expanding clerical sector notwithstanding the rapidly increasing labor force participation of white women, as well as falling wages for clerical workers, and the pressure brought to bear by the Civil Rights movement.

Also of note, the Brazilian gender wage gap grew in most occupational categories between 1960 and 1980, particularly at the top, as is shown in Table 1 on the next page.

Analysis of more recent data continues to show significant race and gender wage gaps, sizeable portions of which are not explained by human capital variables. For instance, based on an analysis of 1998 PNAD data, Loureiro and Carneiro (2001) assert that two-thirds of the urban male/female wage gap stems from discrimination, as does half of the urban black/white gap. They further attribute one-third of the rural male/female wage gap to discrimination, and—again—half of the rural black/white gap.

Cavalieri and Fernandes (1998) also find substantial roles for sex and race variables in a wage decomposition analysis using 1989 PNAD data.

In an extremely comprehensive study of black and white Brazilian women based on several years of PNAD data, Ana Maria Hermeto Camilo de Oliveira (2002) reports that the wage gap between black and white women is large and increasing. Black women's wages have fallen from 55 percent of those of white women's in 1987 to 52 percent in 1999. Further, black women appear to experience far less wage growth over the life cycle than do white women, so that the

Table 1: Women’s Wages as a Percentage of Same-Race Men’s by Race and Occupational Category, Employees 18-64, Urban Brazil, 1960/1980

Occupation	<u>White</u>		<u>Afro-Brazilian</u>	
	1960	1980	1960	1980
White Collar				
Managerial/Admin	63%	55%	78%	57%
Professional/Technical	45	43	54	46
Clerical	67	69	76	73
Total White Collar	55	49	61	57
Blue Collar				
Skilled Manual	73	54	67	59
Transportation/Comm.	61	63	63	53
Unskilled Manual	35	47	36	54
Total Blue Collar	45	46	37	48

Source: Peggy Lovell. 1999. “Women and Racial Inequality at Work in Brazil.” in Michael Hanchard (ed.) *Racial Politics in Contemporary Brazil*. Durham, N.C.: Duke University Press., p. 147.

racial wage gap between women increases with age. Two-thirds of black women in urban Brazil in 1999 earned wages that fell within the lowest 4 deciles of white women’s wages. Differences in educational levels accounts for some part of this gap, but black women earned wages of between 69 and 75 percent of those of white women comparable years of education in 1999. (However, as years of education in this analysis are grouped in categories spanning 3 or 4 years each, it is likely that black women are more clustered at the lower end of each category than are white women.) Geographical location also

plays a role in the racial wage gap between women, as black Brazilians are much more likely to live in the relatively impoverished Northeast than are whites (Oliveira 2002).

These wage gaps appear large in reference to the U.S. experience, and may result from the extreme income inequality found in Brazil. Just as greater American wage inequality appears responsible for the relatively large gender wage gap in the U.S. as compared with Europe, it may be that the size of Brazilian labor market differentials stems from the even greater income inequality found in Brazil (Blau and Kahn, 2000).

Pooling data from 1987, 1990, 1993 and 1996 for a wage decomposition analysis, Oliveira (2002) shows that black women receive 57 percent lower hourly wages than do white women, if no control variables are included in the analysis. This falls to 17 percent, once age, marital status, the presence of young children in the household, years of schooling and region are included. Black women appear to earn 13 percent less than comparable white women when additional controls for industry, sector (formal or informal), part-time status and location in a female-intensive occupation are added. As the author points out, it is not at all clear that many of these characteristics are freely “chosen” variables. Years of schooling account for one-half of the “explained” portion of the wage gap, and returns to schooling are lower for black than white women. However big differences in the return to experience, proxied by age, account for the largest share of the “unexplained” portion of the racial wage gap between Brazilian women.

As in the U.S., black Brazilian women are more likely to be concentrated in “female” occupations than are white women (Oliveira 2002, Malveaux 1984) and are one-third again as likely to work in the informal sector as are white women; 60 percent of urban black Brazilianas worked in the informal sector in 1999. According to Oliveira (2002),

nearly one quarter of either black or white women would have needed to change occupations in order to be equally distributed among occupational classifications in 1999.

This measure of occupational segregation is surprisingly low, given the size of the racial wage gap among women and the potential for occupational segregation to explain such a wage gap. Explorations of the parameters of occupational segregation by race and sex in Brazil constitute the focus of the next section.

Occupational Segregation by Race and Sex in Brazil, 1976-2001

With such large race and sex wage gaps, and substantially different returns to education and experience, it seems likely that occupational differentiation plays a big role in the Brazilian labor market, as it has in the U.S. (Cunningham and Zalokar 1992, Trieman and Hartmann 1981). Further, attention to occupational location fleshes out our understanding of race and sex dynamics in the labor market, may reveal the social meaning of race and sex, gives us an idea of the near future--since occupational location today is a strong influence on wage differentials ten years hence—and may indicate what kinds of policies would best alleviate race and sex-based labor market inequalities.³

We can gain a general sense of the impacts of race and sex on occupation by looking at the distribution of people among broad occupational groupings, as is shown in Table 2 below. At this level of aggregation of occupations, we can include Asian and Indigenous people, whose numbers are too small for accurate inclusion in more detailed analyses. Asian and Indigenous women and men together constitute less than one percent of this (weighted) sample.

What is most noticeable is the high proportion of women in personal services; this is the single largest occupation for each group of women, other than Asians. Black and Indigenous

Table 2: Distribution among Occupational Groups by Race and Sex (Percent), 2001

	Women				Men			
	White Indig	Black	Asian	Indig	White	Black	Asian	Indig
Tech, Sci, Artistic	16	10	23	14	8	3	18	5
Administrative	18	9	29	10	16	7	30	5
Farm and Agric.	12	20	7	18	16	28	8	30
Industrial	9	9	4	9	24	27	12	31
Commercial	15	14	21	8	13	10	14	8
Transp & Comm	1	1	1	1	7	6	3	6
Personal Svces	20	31	11	35	3	3	4	2
Other	8	8	4	6	13	16	10	12

Source: Author's calculations from the 2001 PNAD Data

women are also concentrated in agricultural work, whereas white and Asian women are clustered in administrative positions. Less than ten percent of women of any group are employed in industrial work, where the largest concentration of white men is located. Black and Indigenous men are particularly represented in agricultural and industrial positions; Asian men are concentrated in administrative and technical/scientific/artistic employment. Very few men work in personal services, and even fewer women are found in transportation and communications occupations.

Another broad but revelatory classification is by type of employment, as is shown in Table 3, which clearly demonstrates the importance of informal work and self employment in Brazil.

White men are most likely to be employed in the formal sector, but even among white men, only

Table 3: Distribution Among Employment Types by Race and Sex (Percent), 2001

	Women				Men			
	White Indig	Black	Asian	Indig	White	Black	Asian	
Employee-formal	30	19	23	20	36	29	29	26
Military	0	0	0	0	1	1	0	0
Public Service	10	7	9	8	5	4	6	3
Employee-informal	13	14	12	12	18	27	14	20
Domestic-formal	4	5	1	5	0	0	0	0
Domestic-informal	10	18	3	19	0	1	1	0
Self Employed	16	17	21	17	26	28	22	31
Employer	3	1	16	3	8	3	21	3
Producing for Self	5	8	2	16	2	2	0	13
Construction for Self	0	0	0	0	0	0	1	0
Unpaid	9	10	13	1	4	6	6	3

Source: Author's calculations from the 2001 PNAD Data.

50 percent are accounted for by formal employment, including the role of employer, as found by adding the figures from the top three rows and the 8th row from Table 3. For black women, this proportion is just 27 percent, for white women 43 percent and black men 37 percent. It's highest for Asians, because of their unusual propensity to be employers, so that 48 percent of Asian women and 56 percent of Asian men appear formally employed.

Again the importance of domestic work is highlighted for women, particularly black and indigenous women, as is the fact that the bulk of domestic work is informal. Self employment is an important category of employment for all groups, and subsistence production is still important for indigenous people. Sizeable numbers of women are working without pay, presumably in family businesses, including 9 percent of white women and 10 percent of black women. Half as many men are also working without pay. These figures also demonstrate the relatively small size of the public sector, which employs roughly the same proportions of people as are working without pay.

Finer Measurement of Occupational Differentiation

Measurement of occupational differentiation is fraught with methodological problems. The most obvious is that a more aggregated occupational classification scheme reveals less segregation. For example, a broad occupational group such as professionals might appear to be sexually integrated, even if it were composed of only two individual professions that were completely segregated, as would be true if nursing and accounting were the only professions and all nurses were women and all accountants were men.

Clearly we gain far more information from analyzing a more detailed occupational classification scheme, but these change frequently from one year to the next, in order to keep pace with the economy, which is the second problem with the measurement of occupational differentiation over time. However the 1989 and 2001 Brazilian occupational codes are very similar, and we have modified each to create an identical code containing the full sample of observations in 356 occupational codes.⁴

A third difficulty arises from uneven detail in the occupational classification scheme, particularly for comparisons across multiple dimensions, as is attempted in this paper across both race and sex. It appears that “men’s jobs” are far more finely distinguished than are “women’s” jobs and/or women are “crowded” into relatively few occupations. This issue arises for the U.S. occupational classification system, perhaps as a result of greater unionization in work that has been dominated by men, or as a result of what Baron (1994) and other social psychologists have described as “in-group bias” on the part of researchers. An example from the American data are the two largest job categories, secretary and nurse, which between them included 4 percent of the U.S. labor force in 1996, as opposed to the 7 percent of the labor force catalogued by 101 job classifications within the overall category of Operators, Fabricators and Laborers.

There appear to be even fewer occupational classifications in the Brazilian data than in the American for “women’s jobs.” Of the 374 occupations detailed in the occupational classifications in 2001, only 29—or one out of 13—are less than 10 percent male, while one-third are less than 10 percent female. It may be relatively difficult to discern occupational segregation by race among women. If most women are found in relatively few occupations, then racial differences may be obscured and measured differentiation low.

The first set of analyses presented are Duncan indices for black and white women and men, calculated for the 2001 data using the current 374 occupation classification scheme. Duncan measures range from 0 to 1, with 0 representing complete integration and 1 complete segregation. A Duncan measure can also be interpreted as the same as that

proportion of either group that would need to change occupations in order to be identically distributed among occupations as the group to which they are being compared. As shown in Table 4, occupational segregation is much more pronounced by sex than by race, as is true in the U.S.

Race and sex segregation may at first appear lower in Brazil than in the U.S., because these figures are about 10 percentage points lower than comparable figures for the U.S (King 1992). However this comparison is invalid, since the underlying occupational classification schemes are

Table 4: Duncan Indices of Occupational Segregation by Race and Sex, 2001

All Women and Men	0.527
All Blacks and Whites	0.224
Black and White Women	0.229
Black and White Men	0.230
Black Women and Men	0.551
White Women and Men	0.522
Black Women and White Men	0.601
White Women and Black Men	0.587

Source: Author's calculations from the 2001 PNAD data.

different. It might be reasonable to speculate that, in fact, occupational differentiation may be more pronounced in Brazil than in the U.S., because the current U.S. occupational code distinguishes 503 occupations as compared with 374 in the Brazilian data, and as mentioned above, a finer system of classification will reveal a greater level of differentiation.

Interestingly, women and men appear to be segregated by race within their sex group to a very similar degree. Again, however, we have reason to think that racial segregation among women may be underestimated, given the paucity of “women’s jobs” in the occupational code.

Finally, the greatest differences appear between black women and white men. Of black and white women and men, white men earn the most and black women the least, so it is hardly surprising to find that they are most differently placed in among occupations. However, black men and white women are almost as differentiated on the job, showing the power of combining both race and sex distinctions.

Educational differences are pronounced between the races, which may explain at least some of the racial differentiation among occupations. Indeed, as shown in Table 5, the racial element

Table 5: Occupational Segregation by Race, Sex and Years of Education, 2001

	Years of Education			
	0 - 3	4 - 7	8 - 11	12+
All Women and Men	0.527	0.601	0.542	0.409
All Blacks and Whites	0.119	0.144	0.162	0.233
Black and White Women	0.102	0.165	0.173	0.249
Black and White Men	0.135	0.172	0.170	0.269
Black Women and Men	0.512	0.609	0.582	0.460
White Women and Men	0.561	0.612	0.523	0.411
Black Women and White Men	0.568	0.638	0.590	0.557
White Women and Black Men	0.526	0.588	0.536	0.356

Source: Author's calculations from the 2001 PNAD data.

of occupational segregation is substantially smaller within groups with similar educational backgrounds than for the group as a whole, and even within these groups we may assume that blacks have less education than whites, on average. However, it is also true that occupational differentiation by race is greater at higher levels of education, indicating that race becomes a more important influence on occupation at higher levels of education. By contrast, occupational differentiation by sex reaches its lowest levels

among the most educated. Interestingly, the lowest level of differentiation by sex occurs between the best educated black men and white women.

Sector of employment is an important aspect of the Brazilian labor market, and appears to affect the degree of occupational differentiation by race and sex, as is seen in Table 6. Sex segregation is more pronounced in the informal sector than the formal, and more evident in the formal labor market than in the public sector. Race differentiation is particularly low among

Table 6: Occupational Segregation by Race, Sex and Sector of Employment, 2001

	Informal	Formal	Public Sector
All Women and Men	0.693	0.577	0.559
All Blacks and Whites	0.219	0.223	0.198
Black and White Women	0.221	0.231	0.181
Black and White Men	0.226	0.224	0.247
Black Women and Men	0.736	0.625	0.585
White Women and Men	0.652	0.550	0.554
Black Women and White Men	0.720	0.603	0.596
White Women and Black Men	0.739	0.644	0.600

Source: Author's calculations from the 2001 PNAD data.

women in the public sector, as is true in the U.S., but it is more pronounced for men than elsewhere. Historical research is needed in order to find out whether the public sector has played the same kind of “demonstration” role in the employment of women and people of

color in previously nontraditional occupations in Brazil as appears to have occurred in both the U.S. and Britain (King 1993).

Change in the level of occupational differentiation by race and sex since 1989 are shown in Table 7. For the purposes of this comparison, the occupational classifications in the two years, already close, have been made directly comparable. Slight modifications to each year's data generated 356 occupations common to both years. Comparison between the two years reveals an approximately 10% decline in occupational differentiation by sex in each of the analyses that include sex. Racial distinctions between women seem to have fallen, also by about 10 percent, but not among men. Evidence of this progress is found in more detailed comparisons

Table 7: Changes in Occupational Differentiation by Race and Sex, 1989 and 2001*

	1989	2001
All Women and Men	0.578	0.527
All Blacks and Whites	0.228	0.222
Black and White Women	0.251	0.225
Black and White Men	0.221	0.228
Black Women and Men	0.614	0.551
White Women and Men	0.556	0.524
Black Women and White Men	0.610	0.601
White Women and Black Men	0.625	0.587

* The occupational classification schemes of 1989 and 2001 have been modified to be comparable, with a total of 356 classifications examined in each year.
Source: Author's calculations, from the PNAD data, 1989 and 2001.

within educational groups (not shown here). Of the 32 indices—four educational groups times 8 comparisons—25 fell, even if only by a small amount. The largest declines were among black and white women, and between women and men. The only marked increases were by race within sex groups at the highest levels of education.

In order to gain a better understanding of the sources of change between 1989 and 2001, Tables 8 and 9 show changes at the regional level and by age group. As seen in Table 8, regional estimates of occupational differentiation largely mirror the national estimates, with some minor variations, and the level of differentiation has fallen in all but one of the measures reported between 1989 and 2001.

The most interesting feature of the regional analysis is that race differentiation appears lowest in the Northeast, where populations of Afro-Brazilians are most concentrated. It may be that occupations are more race-typed in regions with fewer blacks. However, the estimates for

Table 8: Changes in Occupational Differentiation by Race, Sex and Region (Duncan Indices), 1989 and 2001*

	1989	2001
North^a		
All Women and Men	.605	.580
All Blacks and Whites	.241	.206
Northeast^b		
All Women and Men	.577	.501
All Blacks and Whites	.187	.190
South^c		
All Women and Men	.590	.563
All Blacks and Whites	.274	.243
Southeast^d		
All Women and Men	.602	.551
All Blacks and Whites	.263	.251
West Central^e		
All Women and Men	.658	.564
All Blacks and Whites	.212	.225

* In order to compare across time, the occupational classification schemes of 1989 and 2001 have been made comparable, with a total of 356 classifications.

^a North includes Acre, Amapá, Amazonas, Para, Rondonia. Although Tocantins is now considered part of this Northern region, it is included in the West Central region for this analysis, as it was in the 1989 PNAD data.

^b Northeast includes the states of Alagoas, Bahia, Ceara, Maranhao, Paraiba, Pernambuco, Piaui, Rio Grande do Norte, Sergipe

^c South includes the states of parana, Rio Grande do Sul and Santa Catarina.

^d Southeast includes the states of Espirito Santo, Minas Gerais and Sao Paolo.

^e The West Central region includes Goias, Mato Grasso, Mato Grasso do Sul, with Tocantins included as part of Goias.

Source: Author's calculations, from the PNAD data, 1989 and 2001.

differentiation by sex are also lower in this region, so perhaps the industrial make-up of the region allows for less differentiation than in the more developed regional economies elsewhere.

Finally, Table 9 illustrates how the change over time has occurred by age group. What is clear is that both race and sex distinctions are more pronounced for older people than for younger people in both time periods. Further, differentiation has fallen in all categories, with the exception of race differentiation among young women and among young men. The greatest declines have occurred along sex lines, but this is hardly surprising as measurable differentiation by sex is more than twice that by race.

Table 9: Changes in Occupational Differentiation by Race, Sex and Age (Duncan Indices), 1989 and 2001*

	1989	2001
Ages 14-34		
All Women and Men	.568	.538
All Whites and Blacks	.225	.233
Black Women and Men	.612	.576
White Women and Men	.539	.506
Black & White Women	.248	.250
Black & White Men	.215	.231
Black Men & White Women	.619	.604
Black Women & White Men	.585	.560
Ages 35 and over		
All Women and Men	.613	.579
All Whites and Blacks	.246	.224
Black Women and Men	.628	.597
White Women and Men	.617	.573
Black & White Women	.269	.220
Black & White Men	.246	.238

Black Men & White Women	.640	.587
Black Women & White Men	.675	.646

* In order to compare across time, the occupational classification schemes of 1989 and 2001 have been made comparable, with a total of 356 classifications.

Source: Author's calculations, from the PNAD data, 1989 and 2001.

Conclusions

In Brazil, as elsewhere, race and sex are highly correlated with labor market outcomes. The literature reports large earnings differentials by race and sex, as well as substantially different returns to education and experience, a phenomenon frequently associated with occupational segregation. Occupational differentiation in Brazil appears to be particularly pronounced by gender, but is also noticeable by race. Race differentiation appears quite similar for both women and men, but the far greater detail in the occupational classification of “men’s jobs” renders this comparison less reliable; it is quite possible that race differentiation among women is actually higher than among men. While race segregation is lower among people with similar levels of education, it grows as education is increased, in contrast to gender differentiation which declines with education. Interestingly, race differentiation within sex is least noticeable in the public sector for women, and most pronounced there for men. Gender differentiation is most extreme in informal employment.

From 1989 to 2001, occupational differentiation has declined in many instances, though it shows an increase by race among people with the highest levels of education, and has not fallen by race among young people or men. Declines in differentiation were greatest along sex lines, but estimates of occupational differentiation by sex remain more than twice those by race.

Notes

1. It may be possible for future work to extend this analysis into the late 1970s, if technical issues with that data can be resolved.
2. See King (1992) for a discussion of the utility and limits of this measure for evaluating occupation differentiation over time. See White (1986) for a more technical discussion of alternative indices.
3. Mutari, Figart and Power (2001, p. 42) provide a useful analysis of the process of wage setting as reflecting not only a price for labor and more or less adequate source of livelihood, but as a social practice that “can either reproduce or transform gender relations.” Clearly this concept applies equally well to race relations, as the authors recognize.
4. In more difficult circumstances, a subset of occupations can be analyzed, as in the estimates reported for the U.S. by Blau and Hendricks (1979) and King (1992).

References

- Baron, James N. 1991, 'Organizational Evidence of Ascription in Labour Markets', in Richard R. Cornwall and Phanindra V. Wunnava (eds.), *New Approaches to Economic and Social Analyses of Discrimination*. New York: Praeger, 113-143.
- Blau, Francine D. and Lawrence Kahn. 2000. "Gender Difference in Pay." *Journal of Economic Perspectives*. 14 (4): 75-100.
- Blau, Francine D. and Wallace E. Hendricks. 1979. "Occupational Segregation by Sex: Trends and Prospects." *The Journal of Human Resources* 14 (2): 197-210.
- Cavaliere, Claudia Helena and Reynaldo Fernandes. 1998. "Diferenciais de salários por gênero e cor: uma comparação entre as regiões metropolitanas brasileiras." *Revista de Economia Política* 18 (1): 158-175.
- Cunningham, James S. and Nadja Zalokar. 1992. "The Economic Progress of Black Women, 1940-1980: Occupational Distribution and Relative Wages." *Industrial and Labor Relations Review* 45 (3): 540-555.
- Economist, The*. 2003. "Race in Brazil: Out of Eden." *The Economist* July 5, 2003, 31-32.
- Hanchard, Michael. 1999. "Introduction" in Michael Hanchard (ed.) *Racial Politics in Contemporary Brazil*. Durham, N.C.: Duke University Press, 1-29.
- King, Mary C. 1993. "Black Women's Breakthrough Into Clerical Work: An Occupational Tipping Model." *Journal of Economic Issues* 27 (4): 1097-1125.
- King, Mary C. 1992. "Occupational Segregation by Race and Sex, 1940-88." *Monthly Labor Review* 115 (4): 30-37.
- Loureiro, Paulo R.A. and Francisco Galrao Carneiro. 2001. "Discriminação no mercado de trabalho: Uma análise dos setores rural e urbano no Brasil." *Economic Aplicada/Brazilian Journal of Applied Economics* 5 (3): 519-45.
- Lovell, Peggy. 1999. "Women and Racial Inequality at Work in Brazil." in Michael Hanchard (ed.) *Racial Politics in Contemporary Brazil*. Durham, N.C.: Duke University Press. 138-153.
- Malveaux, Julianne. 1984. "Low Wage Black Women: Occupational Descriptions, Strategies for Change" Unpublished Paper Prepared for the NAACP Legal Defense and Educational Fund, Inc.
- Mutari, Ellen, Deborah M. Figart and Marilyn Power. 2001. "Implicit Wage Theories in Equal Pay Debates in the United States." *Feminist Economics* 7 (2): 23-52.

Nobles, Melissa. 2002. "Lessons from Brazil: The ideational and Political Dimensions of Multiraciality." In Joel Perlmann and Mary C. Waters (eds.) *The New Race Question: How the Census Counts Multiracial Individuals*. New York: Russell Sage Foundation, 300-317.

Oliveira, Ana M.H.C. 2002. "Trends in Wage Inequality for Cohorts of Brazilian Black and White Women." *Population Association of America Meeting, Atlanta 2002, Proceedings*.

Telles, Edward E. 1999. "Ethnic Boundaries and Political Mobilization Among African Brazilians: Comparisons with the U.S. Case." In Michael Hanchard (ed.) *Racial Politics in Contemporary Brazil*. Durham, NC: Duke University Press (82-97).

Telles, Edward E. 2002. "U.S. Foundations and Racial Reasoning in Brazil." Unpublished Paper, January 2.

Trieman, Donald and Heidi Hartmann. 1981. *Women, Work and Wages: Equal Pay for Jobs of Equal Value*. Washington, D.C.: National Academy Press.

Twine, France Winddance. 1998. *Racism in a Racial Democracy: The Maintenance of White Supremacy in Brazil*. New Brunswick, NY: Rutgers University Press.

White, Michael J. 1986. "Segregation and Diversity Measures in Population Distribution." *Population Index*. 198-221.