

EL ROL DE LOS ESTUDIOS DE POBLACIÓN TRAS LA PANDEMIA DE COVID-19 Y EL DESAFÍO DE LA IGUALDAD EN AMÉRICA LATINA Y EL CARIBE

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A Multidimensional Perspective of Job Quality: Race and gender differentials in Brazil, 2005-2015

#### **ABSTRACT**

Labor earnings are widely used as indicators of social upward mobility, as the primary source of income for the largest share of the population. However, in recent decades, changes in the global labor market have resulted in highly precarious jobs, i.e. lower job quality. A cornerstone to job quality is the accumulation of vulnerabilities in the labor market. This paper investigates gender and race gaps regarding the overlap of low-quality jobs characteristics and explicitly considering the multidimensionality of this indicator. With almost half of the Brazilian workforce allocated in informal jobs, Brazil is very likely to have general work conditions worsened due to the unfold of such process. However, between 2005 and 2015, diverse public policies were implemented aiming to improve the quality of employment – e.g. real increases on minimum wage and formality to domestic workers. Data come from the National Household Sample Survey (PNAD) of the Brazilian Census Bureaus (IBGE) for 2005 and 2015. An index of overlapping dimensions for job quality in Brazil is constructed and is modeled by an ordered probit model with sample selection correction. Results show that historically vulnerable groups - women and non-whites - are over-represented in the multidimensional analysis of job quality. These two intersected demographic groups, non-white women, experienced the smallest changes in inequality on most of the dimensions covered here. Women show a lower labor market participation than men and have jobs of lower quality, whereas despite non-whites have the same level of labor market participation as whites, they are more vulnerable. Over time, despite the improvement amongst non-vulnerable individuals and the reduced levels of accumulation of low-quality jobs dimensions, the structural basis of gender and race differentials at labor market persist.

### Introduction

Participation in the labor market is crucial for quality of life, as labor earnings are the primary source of income for the largest share of the population. However, in recent decades, changes in the labor market led to an increase in low-quality occupations. According to Horemans (2018), these are profound changes, originated in a complex social framework that involves globalization, changes in routine work processes due to automation, and the labor force allocation of women primarily in the service sector – a sector particularly susceptible to precariousness related to work conditions.

Some less developed countries have an oversized informal economy, so workers' lack of security arises from historical processes, not necessarily from a loss of rights (Kalleberg, 2009). With approximately half of the workers allocated in the informal sector, Brazil is a candidate to have its working conditions worsened by the aforementioned shifting processes. Nevertheless, between 2005 and 2015, a series of public policies were designed and implemented to increase the country's quality of work<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup> For example, in 2013, the act "Emenda Complementar (EC) 72/2013" allows the work of domestic servants to be recognized as formal employment, and the act "Lei do Microempreendedor Individual (MEI) 128/2008" allows the formalization of microentrepreneurs. In addition, during this period, the federal government adopted a policy of real increase in the minimum wage.

Historically vulnerable groups are overrepresented in low quality jobs. Individual characteristics such as gender and race are especially relevant to understand the quality of work, especially in Brazil (Osório, 2004; Bilac, 2014).

Women's entry into the labor market in Brazil occurred through two channels. Part of them entered the job market in search of individual freedom and self-development. Others sought to supplement their income, revealing the failure of the male breadwinner provision system. The latter group is primarily allocated in manual occupations in the service sector (Machado, Hermeto, and Wajnman; 2005), usually characterized by precarious jobs and informality.

The racial question in Brazil has its origins in the colonization and slavery processes. Garcia, Ñopo and Salardi (2009) argue that there is a racial component in labor markets today. These authors, among others (e.g., Henriques, 2001; Campante, Crespo and Leite, 2004), indicate that non-whites are predominant in occupations characterized by low paying jobs and in the informal sector, which are often related to precarious work.

The joint analysis of the aspects of gender and race is necessary, since they exert pressures on the production and reproduction of inequalities (Lima et al, 2013). Soares (2000) states that there are distinct sources of pressure in the labor market for women and non-whites in Brazil. For non-whites, there is a significant barrier to entry into non-manual occupations, due to low formal education. Women, on the other hand, earn considerably lower levels of labor income, compared to their male counterparts. Non-white women would aggregate both aspects of gender and race, which leaves them into a more critical situation compared to the other groups.

The accumulation of vulnerabilities seems to be the central issue of job quality, as there are several overlaps either in the labor market or in individual attributes. Several labor market characteristics configures precarious work. If poverty analysis has resulted in a new paradigm based on multidimensionality<sup>2</sup>, the same has not happened for labor market analysis. Most analyzes of the labor market focus on wage distribution or unemployment rates, always with a single focus on the income dimension. However, analyzing unemployment alone is not enough to understand the current changes in labor markets, such as the processes of labor flexibilization (Kalleberg, 2009; Hirata, 2011; Horemans, 2018). In this sense, this study is part of an effort to carry forward the discussion of multidimensionality in the labor market in a

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<sup>&</sup>lt;sup>2</sup> For more about this discussion, see Foster, Greer, and Thorbeck (2010), Atkinson (2003) and Sen (1997).

specific context of a society historically marked by precariousness and social exclusion, especially for specific demographic groups (see also Caetano and Maas, 2009, and Huneeus et al., 2015).

This paper is divided in five sections, including this introduction. The next presents the data and methods. The third and fourth sections provide a descriptive and an econometric analysis, respectively. The final section presents the concluding remarks.

## **Data and Methods**

Huneeus et al. (2015) propose a dual cutoffs index based on Alkire and Foster (2011) considering three dimensions: income, labor market stability, and informality. They establish a threshold in each dimension and then compute a sum of the characteristics, establishing another summary measure threshold which simplifies the index. Caetano and Maas (2009) showed results of an overlapped index of characteristics of Brazilian job quality for 1996, 2001, and 2006. These authors applied four binary categories of precarious work, with their respective cutoffs. Though the authors opt for a more straightforward methodology for multidimensional job quality than Huneeus et al. (2015). Instead of using the dual cutoff method, they apply a sum of the number of characteristics related to the quality of work. Thus, the Brazilian labor market is split into different levels of job quality, which are defined by the according numbers of cumulative characteristics.

In our study, data come from the National Household Sample Survey (PNAD) of the Brazilian Census Bureau (IBGE) for 2005 and 2015. We consider only individuals with the following characteristics: residents in urban areas between the ages of 18 and 70; with positive income from work (i.e., excluding workers for their own consumption or non-remunerated); not retired; not students; family heads, spouses or children.

Initially we constructed four binary sub-indices on the labor market (Chart 1). The sub-indices are defined so that if the individual does not have a job quality characteristic, he/she receives a score 1. Otherwise, he/she receives a score 0. The simple addition of these sub-indices scores provides the main overlap index of job quality dimensions. Thus, it presents levels (or ranks) that varies from 0 to 4. Individuals in level 4 are the most vulnerable in the labor market, while those in rank 0 have a better quality of employment.

Chart 1 - Binary variables that compose the Overlap Index of Job Quality Dimensions

Sub-index	Dimension	Description
Monetary Poverty	Income	It assumes a value of 0 for individuals with labor income above the minimum wage. Otherwise, it assumes score 1.
Lack of Social Security	Contract type and participation in social security	It assumes a value of 1 if the individual has an informal job (excluding professionals in the sciences and arts) or does not contribute to social security and assumes a value of 0 if he contributes to social security and has a formal contract.
Job Stability		It assumes a value of 1 if the worker has been in the current job for less than one year and 0 if he has been in the current job for more than one year at.
Involuntarily Reduced Worked hours per week	Atypical Work	It assumes a value of 1 if the individual worked less than 20 hours per week or between 20 and 30 hours per week and has searched for an alternative job in the reference week. Assumes a value of 0 if the individual declares 30 to 98 hours worked per week or between 20 and 30 hours per week and have not searched for an alternative job work in the reference week.

Source: Own elaboration.

Moreover, the econometric analysis intends to capture the structure of the overlap index of job quality. The ordered probit model was chosen because it analyzes a conceptual variable represented by another ranked one. However, as the study is restricted to the labor market, we only observe the variables related to workers. Therefore, we need to make a correction for sample selection. The process is estimated simultaneously in two steps by the maximum likelihood method: one for labor market selection and other to estimate the ordered probit (Luca and Perroti, 2011). The dependent variable is the index constructed from the superposition of job quality characteristics. The covariates can be divided in three groups. The first contains individual variables: gender, race, age groups, and years of formal education groups. The second includes variables that indicate the workers' family arrangements: type of family member, type of family, presence of extended family(ies), and the number of children under 15 years old. The third incorporates locational variables: macro-region of residence, residence in a metropolitan area and inter-municipal migration for more than ten years.

# **Descriptive Results**

Table 1 presents the results of the Overlap Index of Job Quality, according to its dimensions. Over the period, only the dimension of involuntarily reduced worked hours increased, in 7.7%. The decrease of 6.5 percentage points in the dimension of absence of social security, a fall of 14.1% in relation to the initial value, occurs in parallel with a decrease in the

values of instability in the labor market of 19.9%. That is, for the workforce as a whole and in each specific dimension, there appears to have been an overall improvement in conditions by 2015.

Table 1 - Percentage of Workers by Dimensions of The Overlap Index of Job Ouality - Brazil, 2005-2015

Dimensions	2005 – Selected Workers	2015 - Selected Workers	Variation between years for selected individuals (%)
Involuntarily Reduced Working Hours	8,9	9,6	7,7
Lack of Social Security	46,3	39,8	-14,1
Monetary Poverty (Minimum Wage)	28,7	12,6	-56
Job Instability	18,9	15,1	-19,9

Source: PNAD 2005 and 2015. Own calculations.

Table 2 shows the computed index. Over time a reduction in the percentage of individuals with at least one dimension and an increase in the level of absence of characteristics can be observed. Additionally, the largest reductions occur for at least 2 dimensions. Despite these reductions, the Brazilian labor market had approximately 30 million individuals with at least one of the dimensions of low-quality work in both years.

Table 2 - Distribution of workers by the Overlap Index of Job Quality Brazil, 2005-2015 (%)

Number of Dimensions	Frequency 2005	Frequency 2005(%)	Cumulative Frequency 2005 (%)	Frequency 2015	Frequency 2015 (%)	Cumulative Frequency 2015 (%)	Variation between 2005 and 2015 (%)
Absence	19.784.338	38,6	38,6	31.102.214	49,4	49,4	13,8
1	16.346.700	31,9	70,5	19.997.835	31,8	81,1	-5,4
2	9.736.939	19,0	89,5	7.766.547	12,3	93,5	-18,5
3	4.658.531	9,1	98,6	3.469.367	5,5	99,0	-18
4	708.934	1,4	100,0	657.701	1,0	100,0	-14,2
Total	51.878.685	100		64.075.172	100		

Source: PNAD 2005 and 2015. Own calculations.

These results contrast with Caetano and der Maas (2009) analysis, which do not show a change in more precarious labor market conditions. Yet, our results are close to Huneeus et al (2015), who interpret this outcome as a convergence of labor market aspects and economic growth in most of the period analyzed in this paper.

Table 3 presents the gender differentiated results. Throughout the period, women increased their participation in the best job quality level, reducing the gender gap in 2015. However, the gender gaps have hardly changed for the levels with at least one precariousness

dimension. These results also converge with Huneeus et al. (2015), which describes an improvement for women, especially between 2009 and 2011.

Table 3 - Distribution of workers by gender, by the Overlap Index of Job Quality Brazil, 2005-2015 (%)

Number of Dimensions	Women 2005	Men 2005	Women 2015	Men 2015	Variation Between Years- Women	Variation Between Years- Men	Gender Gap - 2005	Gender Gap - 2015
Absence	35,3	41,0	49,3	49,4	39,8	20,5	16,2	0,2
1	27,3	35,2	26,6	35,7	-2,2	1,2	29,3	33,9
2	20,5	17,9	13,3	11,6	-35,3	-35,3	-12,4	-12,4
3	14,2	5,4	8,9	2,9	-37,5	-46,5	-61,7	-67,2
4	2,8	0,4	1,9	0,4	-32,0	0,0	-86,0	-79,4
Total	100	100	100	100				

Source: PNAD 2005 and 2015. Own calculations.

Table 4 shows the changes between 2005 and 2015 for non-whites (blacks and browns) and whites. Meanwhile the racial gap in the absence of precariousness dimensions reduces from 44% to 23%, the gap in all the other levels of the overlap index of increased. The most significant shifts, at the expense of the non-whites, are observed in levels with only one dimension. So, changes in job quality seem to have had no structural impact on racial asymmetries.

Table 4 – Distribution of Workers by Race, by the Overlap Index of Job Quality Brazil, 2005-2015 (%)

Number of Dimensions	Non- white 2005	White 2005	Non- white 2015	White 2015	Variation Between Years - Non- whites	Variation Between Years - Whites	Racial Gap - 2005	Racial Gap - 2015
Absence	31,16	44,92	44,43	54,81	42,6	22,0	44,2	23,4
1	31,46	32,28	32,15	31,3	2,2	-3,0	2,6	-2,6
2	23,72	15,02	14,98	9,41	-36,8	-37,4	-36,7	-37,2
3	11,87	6,74	7,09	3,76	-40,3	-44,2	-43,2	-47,0
4	1,79	1,04	1,34	0,72	-25,1	-30,8	-41,9	-46,3
Total	100	100	100	100				

Source: PNAD 2005 and 2015. Own calculations.

Table 5 presents the results of the cumulative differentials of gender and race, elucidating tables 3 and 4. These descriptive results indicate that the process pointed by Soares (2000) is evidenced for 2005 and 2015. The improving quality of employment shown in table 5 is concentrated in the white women group, which presents the highest percentage decreases in the levels with at least two characteristics: 37.9%, 44.8%, and 39.2%, respectively. Non-white women, presents positive results, including the largest percentage increase in the absence of dimensions level, 62.1%. However, it is the only group that has a percentage increase

between 2005 and 2015 - in the level with one dimension, 0.2%. In contrast, for the rest of the levels they present intermediary results.

Table 5 - Distribution of workers by gender and race, by the Overlap Index of Job Quality – Brazil, 2005-2015 (%)

					005	<del>-,</del>			
Number of Dimensio ns	Non- white Women	White Women	Non- white Men	White Men	Variation between Women	Variation between Men	Variation between Non- white Women and White men	Variation between White Women and White men	Variation between Non- white Women and Non- white men
Absence	26,9	41,9	34,0	47,2	55,9	38,9	75,9	12,8	26,7
1	26,2	28,1	35,0	35,5	7,1	1,5	35,3	26,4	33,3
2	24,9	17,0	22,9	13,5	-31,5	-41,2	-45,8	-20,8	-7,9
3	18,3	11,0	7,6	3,5	-39,5	-54,2	-80,9	-68,4	-58,3
4	3,8	2,0	0,5	0,3	-47,5	-34,0	-91,8	-84,4	-87,6
Total	100	100	100	100					
				20	015				
Dimensio ns	Non- white Women	White Women	Non- white Men	White Men	Variation between Women	Variation between Men	Variation between Non- white Women and White men	Variation between White Women and White men	Variation between Non- white Women and Non- white men
Absence	43,6	55,1	45,1	54,6	26,6	21,1	25,3	-1,0	3,4
1	26,3	27,0	36,3	34,9	2,8	-4,0	32,8	29,1	38,3
2	15,9	10,6	14,3	8,4	-33,6	-41,1	-47,1	-20,3	-10,2
3	11,7	6,1	3,8	1,8	-47,8	-52,6	-84,4	-70,1	-67,1
4	2,6	1,2	0,5	0,3	-53,1	-32,6	-88,0	-74,4	-82,2
Total	100	100	100	100					
				Variation -	- 2005 e 2015	5			
Number of Dimensio ns	Non- white Women	White Women	Non- white Men	White Men	between Women	between Men	between Non- white Women and White men	between White Women and White men	between Non- white Women and Non- white men
Absence	62,1	31,6	32,4	15,5	-52,5	-45,7	-66,7	-108,1	-87,1
1	0,2	-3,8	4,0	-1,7	-60,3	-370,0	-7,2	10.5	15,0
2	-36,0	-37,9	-37,6	-37,5	6,5	0,2	2,8	-2,5	29,1
	26.1	-44,8	10.6	47.0	20.0	2.0	4.2	2.5	15 1
3 4	-36,1 -31,9	-44,8 -39,2	-49,6 -2,1	-47,9 0,0	20,8 11,8	-2,9 -4,2	4,3 -4,2	2,5 -11,9	15,1 -6,2

Source: PNAD 2005 and 2015. Own calculations.

The proportion of men in the level with the higher number of working vulnerabilities in the analyzed period shows no variation for non-whites and whites. The results show a drop in the difference between non-white and white men. However, the results for the level with one feature of precarious employment conditions show disadvantages for non-whites compared to

whites. In 2005, Non-white men were a 1.5% smaller contingent than white men, reversed by whites in 2015, with a 4% smaller contingent than non-white men.

### **Econometric Results**

The econometric model results are presented for gender and race in Table 6. Wald's test on the ordered probit and selection model equations' dependence rejects the equation independence's null hypothesis. Besides, the residuals of the two estimates have correlations different from 0 - 0.1778 and 0.1502 for 2005 and 2015, respectively. Thus, the results are consistent regarding the need for selection correction. The cut-off points are all statistically significant at 1%.

Table 6 - Labor Market Participation Coeficients (Probit Model) and Ordered Probit Model with sample selection correction – 2005 and 2015

Labor Market Participation Coeficients						
Variables	2005	2015				
Condon	0,911*	0,814*				
Gender	-0,01	-0,011				
D	-0,013***	-0,016				
Race	-0,009	-0,009				
Ordered Probit Estin	nates					
Variables	2005	2015				
C1	-0,314*	-0,233*				
Gender	-0,012	-0,009				
D	-0,116*	-0,072*				
Race	-0,008	-0,009				
C-+ 1	-1,679*	-1,396*				
Cut 1	-0,033	-0,036				
C-+ 2	-0,727*	-0,412*				
Cut 2	-0,032	-0,035				
Cut 3	0,101*	0,290*				
Cut 3	-0,032	-0,035				
Cut 4	1,152*	1,165*				
Cut 4	-0,032	-0,036				
atrho	0,180*	0,151*				
airno	-0,015	-0,012				
Number of uncensored observations	112,278	106,553				
Number of Observations Censored	47071	43893				
Pseudologlikelihood	-9,69	-1,11				
Wald global	14066,23	9820,79				
Wald independent equations	145,39	153,8				
rho	0,1778	0,1502				

Source: PNAD 2005 and 2015. Own calculations

Note: \*p-value<0,01 \*\*p-value<0,05 \*\*\*pvalue<0,10 Note: Base Category - Female, Non-white (Black and Brown)

Results show that, despite of the advances in labor market participation, women still have a higher exposure to precarious jobs. The share of female workforce allocated to informal

occupations and low-paying jobs alongside different kinds of precarious features is still representative, corroborating Machado, Hermeto and Wajnman (2005) evidence.

Whites and non-whites show a slight difference in participation in 2005. In 2015, results did not differ between whites and Non-whites (in 2005 and 2015, magnitudes of -0.013 and -0.016, respectively, and statistically significant at a level of 10%, and not statistically significant). The differences in the coefficients of precariousness in the labor market are small in both years (-0.116 and -0.072). In the analyzed period, controlling for the other individuals, familiar and regional characteristics, the racial gap in the job quality remains, while non-whites' participation in the labor market is similar to whites. The persistence of the racial structure evidenced in our descriptive results is highlighted here, despite the absolute improvement for non-whites.

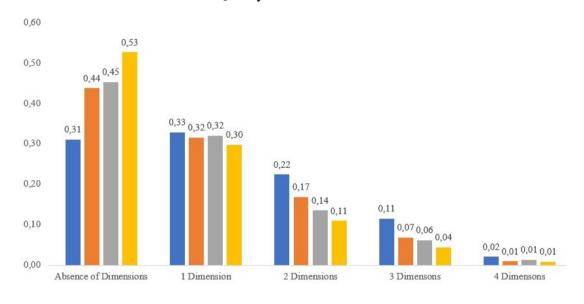
Figure 1 presents the results of the predicted probabilities for sex and color/race according to the levels of the overlap index in the analyzed years. It shows a reduction of the difference by gender at all levels of the labor market, except for the first tier, which presents a small increase. Still, the gap in the probability for the absence of the low-quality dimensions of jobs remains high. Thus, this is a significant difference between the predict probabilities and the descriptive results. When controlling for the other characteristics, the gap in the level of absence of characteristics remains high. The figure shows that women's probability in the absence level of dimensions is lower than men (0.45 and 0.53), despite the reduction between years.

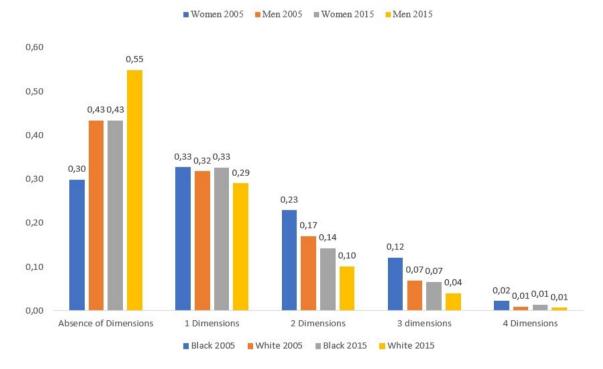
The structure exposed by Soares (2000) may explain this permanence of the differentials between the probabilities in the level of absence of dimensions and one dimension. The three forms of discrimination concerning women – occupational segregation and earnings asymmetries for whites; and training, occupational allocation, and earnings gaps for non-whites - make it difficult to close the gender gap in the level of absence of dimensions. They are more likely to be vulnerable to some dimension of precariousness, despite the improvements in income and the policies that effect changes in the female labor market - policy of minimum wage real increases and the domestic workers formalization, for example.

The first two dimensions for the racial structure are similar to those found for gender. However, the difference between the probabilities between Non-whites and whites is more pronounced. This similarity and the pattern accentuation reaffirm gender and racial structure maintenance of job quality. As discussed by Soares (2000), the form of discrimination against

non-whites and women is different. Thus, the overlapping disadvantages of job quality are present in the intersection of racial and gender labor market structure, more pronouncedly affecting the non-white women.

**Figure 1** – Predict Probabilities for Gender and Race for Each Level of the Overlap Index of Job Quality – 2005 and 2015





Source: PNAD 2005 and 2015. Own calculations

# **Concluding Remarks**

This paper analyses the job quality structure of Brazil in 2005 and 2015. Using data from PNAD, we developed a multidimensional job quality index with overlapping dimensions. Additionally, we estimated ordered probit models with sample selection correction.

The results elucidate questions about the asymmetries of job quality characteristics in Brazil. The main results show that women participate less in the labor market and have lower quality jobs than men, and while non-whites have the same participation level as their white counterparts, they are more vulnerable in the labor market. More generally, there is a persistence of the vulnerabilities pattern in the labor market in the period. The most vulnerable groups accumulate low quality job dimensions and possibly overlapping individual characteristics in both years. These results are more pronounced for non-white women.

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