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The Factors Influencing Intergenerational Mobility Levels among Higher Education Graduates in Brazil: A Comparison of the Years 2004 and 2018

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Abstract: The paper aims to analyze the levels of educational intergenerational mobility of students graduating from higher education in the years 2004 and 2018 and to identify the characteristics associated with the chances of higher levels of educational intergenerational mobility. The paper's main contribution is to provide evidence regarding how public policies contributed to intergenerational mobility. Moreover, the results highlight the persistent inequalities, which are often veiled by apparently positive results that do not conform to the real conditions necessary to break the cycle of poverty between generations. We use data from the Brazilian National Student Performance Exam (ENADE) and estimate an Ordered Probit. The study innovates in the use of data from university graduates, construction of mobility levels, calculation of mobility in relation to the father and the mother separately and controlling for the effect of higher education expansion policies. The results show that greater chances of intergenerational mobility in relation to parents are linked to the following conditions: being a woman; being over 24; a lower income family; not white or yellow; financially helping the family; studying in private institutions; having a scholarship or a Fies loan; being a 'quota student' and being a distance learning.

Keywords: *Education, Higher Education, Intergenerational Mobility, Ordered Probit, Public Policies.*

1. Introduction

Brazil is one of the most unequal countries in the world: the top 10% captures 59% of total national income while the bottom half of the population takes only around 10% (Chancel et al., 2022). This situation provokes a quest for solutions to reduce it; otherwise, its persistence can easily be reproduced between generations, making its eradication even more challenging. This fact is demonstrated by the results of the study by the Organization for Economic Cooperation and Development (OECD, 2018) in which it was found that descendants of low-income Brazilian families (among the poorest 10%), can take up to nine generations to reach the country's average income. The most plausible solution for this situation is through intergenerational mobility of upward education, defined as the case in which the child's educational level, as an adult, is higher than that achieved by his father and/or mother. Intergenerational mobility of upward education is recognized as being fundamental for economic growth, poverty reduction and individual and social development in developing countries, as it generates instruments for achieving better occupations and, consequently, higher income (Li & Zhong, 2017; Tansel, 2002). Children of parents with little or no formal education, who complete higher education, tend to break the so-called poverty trap.

Since this level of education increases the chances of getting jobs with better wages and working conditions (Carvalhaes & Ribeiro, 2019; Hasenbalg, 2003; Salata, 2018). However, reaching higher education involves steps that are not always accessible to families whose parents have no or low education and, consequently, lower income. Among the obstacles to access and permanence are the competition for places in public institutions, the value of monthly fees in private institutions and the difficulty in reconciling study and work. More universal access to higher education is essential to reduce the disadvantages of less privileged groups in society (Carvalhaes & Ribeiro, 2019). Thus, given the pressing need to democratize access to higher education, an expansion in the number of institutions and places offered (Borges & Ribeiro, 2019; Dias Lopes, 2017) has been undertaken through federal public policies such as Fies, ProUni and Reuni. Although the ideal of expanding the admission of students from socio-economically disadvantaged classes endures, there are still barriers to access at this educational level (Mahlmeister et al., 2019). Therefore, this study seeks to identify the characteristics associated with the chances of university graduates, between the years 2004 and 2018, presenting higher levels of educational intergenerational mobility.

Mobility levels were classified as: high, when the father and/or mother never studied or only completed the first years of elementary school; medium, if the father and/or mother completed elementary school; low if the father and/or mother completed high school; and null (or immobility) when the parents completed higher education or graduate school. It should be noted that the individuals who completed higher education in these years (2004 and 2018) are representatives of different institutional contexts since Brazilian higher education has undergone significant changes in the last two decades. This is the first study to analyze educational intergenerational mobility from the perspective of mobility levels. To do so, the units of study adopted are graduates of higher education in Brazil, a level of education with great potential to positively change the economic and social reality of low-income families. In addition, variables related to Brazilian educational public policies are included in the model, enabling a comparison of the chances of higher mobility between those who benefitted from some public policy to reach higher education and those who did not.

The findings of this research are a source of evidence regarding, how public policies implemented over the analyzed time interval contributed to intergenerational mobility, or moreover highlight persistent inequalities, which are often veiled by apparently positive results that in reality do not conform to the real conditions necessary to break the cycle of poverty between generations. As for the analysis of the comparison of chances between groups, according to different variables, of the graduates presenting different levels of mobility, it is worth reiterating (Black & Devereux, 2011, pp. 31-32) who argue that studying intergenerational mobility and its characteristics is "crucial for the development of appropriate public policies because without knowing the mechanisms, it is impossible to understand how to promote change". Therefore, to achieve the proposed objectives, including this introduction, the article has six sections. Section two presents the institutional background related to more equitable access policies for higher education in Brazil, as well as the relevant theoretical framework for educational intergenerational mobility. Section three contains the database and variables used for the empirical strategy, which, in turn, is the subject of Section four. Section five presents and discusses the results obtained, and the Sixth and final Section includes the closing remarks.

2. Theoretical Background

Several studies have explored the relationship between income inequality and educational level associated with the process of accumulating human capital. According to (Checchi, 2006), the educational choices of one generation are correlated to the next, implying that greater equality in schooling will increase social mobility and a reduction in income inequality. In turn, persistent poverty and, therefore, low rates of intergenerational mobility, are the result of a convergence of social characteristics (Durlauf, 2002). In Brazil, the high levels of inequality are attributed to the low intergenerational mobility of income and education (Lam, 1999), determined by spatial segregation, racial discrimination and the multiplicity of family arrangements (Behrman et al., 2001). In this context, reducing educational intergenerational persistence is crucial when seeking to promote intergenerational income mobility and equal opportunities (Lee & Lee, 2021). The lack of upward mobility is it in terms of income, education or occupation, among low-income individuals results in the waste or underdevelopment of potential talents (OECD, 2018).

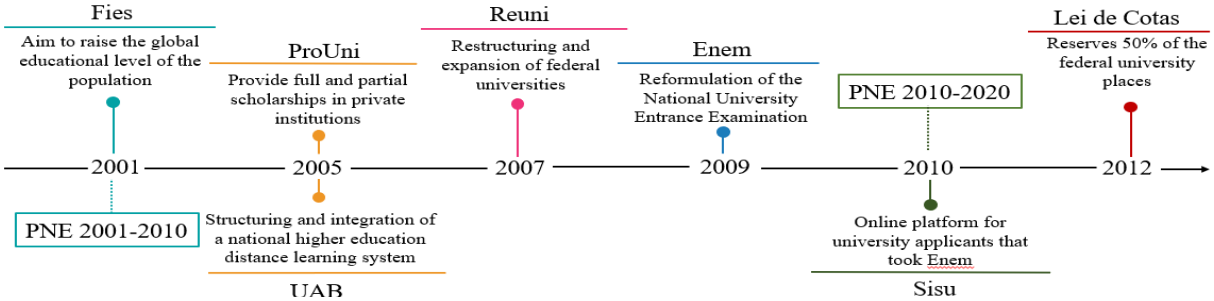
The influence of strong social inequalities on educational outcomes implies that not only individual capacity, but also social characteristics, such as income inequality, credit restrictions and government investments, affect children's educational performance (Lee & Lee, 2021; Pfeffer, 2007). Intergenerational mobility seeks to analyze the educational status between generations and how to overcome it. Even though it may not result in greater wage gains, a more educated society raises the general living conditions, creating a more developed environment and capable of providing more opportunities for future generations (Aydemir & Yazici, 2019). With this understanding, greater investments in education are made to improve social mobility and ensure a comprehensive educational system that replaces private parental investments in human capital (Herrington, 2015; Neidhöfer et al., 2018). In Brazil, having a university degree is directly correlated to increased productivity (Carvalho & Waltenberg, 2015), higher levels of income (Neidhöfer et al., 2018) and more valued social positions (Salata, 2018).

However, the persistence of social inequalities, both in relation to access and in relation to economic returns, demands a deeper analysis of the educational composition related to social origin and race at the highest

levels of education (Carvalhaes & Ribeiro, 2019; Marteleto et al., 2016). Given this, considering the importance of education in the economic and social development of a country, the transmission of inequalities between generations in developing economies is still a largely neglected topic of study (Emran & Shilpi, 2019). The empirical evidence on intergenerational mobility in Brazil (Ferreira & Veloso, 2003, 2006; Gonçalves et al., 2013; Longo & Vieira, 2017; Mahlmeister et al., 2019; Pero & Szerman, 2022; Ramalho & Junior, 2018) demonstrates that this topic is scarcely explored, mainly due to the restrictions imposed by the databases, which are composed, almost exclusively, from the National Household Sample Survey (PNAD)[1]. In the next section, public policies undertaken in the expansion process will be described, as well as more inclusive access to higher education in Brazil.

Institutional Background: Brazil has been undertaking changes in the structure and access to higher education since the late 1990s. Expanding the number of places, justified by Brazil's delay in ensuring the access of its young population to this educational level, has been the objective of several policies (Niquito et al., 2018). The National Education Plan (PNE) was the main measure established to increase the schooling of the population from early childhood education to higher education. Figure 1 shows a chronological summary of the main policies aimed at higher education from the PNE.

Figure 1: Chronology for the Implementation of Policies Designed to Expand Access to Brazilian Higher Education in the 2000s



Source: Elaborated by the authors.

Following the introduction of the PNE, the '*University for All Programs*' (ProUni) and the '*Student Financing Fund*' (Fies), both aimed at the private sector, were implemented. While the public sector saw the introduction of the '*Program to Support Federal University Restructuring and Expansion Plans*' (Reuni) and the expansion of distance learning through the 'Open University of Brazil' (UAB). The Fies program, introduced in 2001, sought to expand the financing of enrolled undergraduate students and aims to facilitate the access of low-income young people to higher education by offering a loan of up to 70% of the costs of the course, with low-interest rates and payment only after the course ends. ProUni, created in 2005, offers full and partial scholarships (50%) in private institutions of higher education and represents the main measure undertaken by the public administration in the democratization of higher education. ProUni and Fies, as tax waiver and direct financing policies, respectively, were fundamental in increasing enrolment in private institutions (Chaves et al., 2016).

According to data from (INEP, 2019), between 2001 and 2018, the number of enrolments in the private sector grew from 2.1 million to 6.4 million. Distance education, regulated through the UAB program, also from 2005, proposed the articulation and integration of a national system of higher distance education, which has become an "alternative" to face-to-face education in the democratization of public education in Brazil. Given

[1] Created in 1967, the PNAD is an annual survey conducted by the Brazilian Institute of Geography and Statistics (Ibge) among a sample of Brazilian households. Its purpose is to determine general characteristics of the population, including data on education, work, income and habitation, as well as other topics, depending on the period. More recently, it has been replaced by the 'PNAD Contínua' which collects similar information, but with greater frequency: at a national level on a monthly basis, and at subnational levels on a quarterly basis.

the country's territorial extension and communication and information technologies, Distance education facilitates access to distant regions, compatibility of time, as well as permanent education (Garcia & Junior, 2015). This modality expanded 18 times between 2005 and 2018, from 114,642 to 2,056,511 enrolments and covering 24.3% of students enrolled in higher education (INEP, 2019). Continuing the goal of expanding and democratizing higher education, aimed at public institutions, Reuni appeared in 2007 to use the physical structure and human resources existing in the federal universities more efficiently.

During the program's existence, which ended in 2012, 60 public faculties and nineteen new federal universities began operations, increasing from 39 to 58 institutions, an expansion of approximately 50%. Reuni also sought to internalize higher education, to promote development in the regions where the new universities were installed (Vinhais, 2013). In short, the programs promoted an unprecedented expansion of the private and federal education network, expanding the number of places and institutions of higher education. The PNE reformulation in 2010 with the objectives of continuing and increasing the places offered in the federal higher education network through expansion and internalization, as well as favoring the participation of historically disadvantaged groups in higher education. The reformulation of the National High School Examination (Enem), the introduction of the Unified Selection System (Sisu) and the Quota Law comprise the main measures of the new PNE. The Enem was reformulated in 2009 to transform the examination from an evaluation instrument to a mechanism for unifying the selection processes of Brazilian federal universities. 2010 saw the implementation of the Sisu, an online platform designed to enroll students who took Enem in the places offered by public institutions of higher education.

Unifying the forms of selection, according to (Nogueira et al., 2017) is more efficient, while also lowering operational costs and providing greater reach for the institutions. In addition to promoting geographic mobility among students, Sisu, together with the Quota Law, can foster the inclusion of disadvantaged groups in higher education. In general, the law establishes that 50% of vacancies in federal institutes and universities are reserved for students from the public high school system. The places reserved for quota students are subdivided by income (higher and lower than 1.5 minimum wages *per capita*) and by the minimum percentage of the sum of black, brown and indigenous people in each unit of the federation. Articulating these accesses to higher education policies, especially in favor of socioeconomically disadvantaged groups, *a priori*, constitutes a favorable scenario for the reduction of inequalities. However, the effects of this expansion at the educational level have not yet been explored in relation to the capacity to promote intergenerational mobility in Brazil. Hence, the next section addresses the empirical strategy adopted to identify the chances of achieving a higher level of intergenerational education mobility in relation to parents' education.

3. Data and Variables

The empirical evidence upon which this study is based was generated from the Enade microdata[2], which consists of an annually applied test used to evaluate Brazilian higher education courses. Along with this test, students answer the "Student Questionnaire", which includes questions related to parental education, income, marital status and other socioeconomic issues relating to the individual. The Enade is completed by students entering into and graduating from higher education, however, given the objective of the study, only graduating students were included in the analyzed sample. According to Behrman et al. (2001), incoming students need to be excluded because they have not reached the highest level of education to make the comparison with the highest level of education achieved by their parents. The years 2004 and 2018, the first and the last year for which data are available were analyzed, enabling the analysis of the evolution and characteristics of cases of mobility over a period of fourteen years.

[2] The Enade was proposed in 2003 and formally instituted in 2004. The set of courses is divided into three blocks, and only one of these blocks is assessed each year. Based on the students' performance, the test, totalling 40 questions, is divided into two parts: the first on general knowledge (GK) and the second on a specific component (SC). In the GK component integral elements of the professional profile are considered, such as ethical attitude, social commitment, capacity for critical analysis. The SC assesses issues specific to the area of knowledge of the course.

There was a significant expansion of higher education in Brazil. To define the level of educational intergenerational mobility, the level of education of the father and mother is used. The educational levels of the father and mother considered are no formal education or limited elementary education (early grades only); elementary school (complete); high school (complete) and higher education. If the father had little or no formal education (up to initial elementary grade), it is a case of high educational mobility, of the child in relation to the father. If the father completed elementary school, it is a case of medium mobility, if the father completed high school, it is considered low mobility. If the father has completed higher education or graduate studies, it is a case of educational immobility between the father and the child. The same classification is performed to identify the level of mobility between the child and the mother. The definition of the variables used in the study and their descriptive statistics are shown in Table 1.

Table 1: Definition of the Variables and Descriptive Statistics

Variables	Definition	Mean		Standard Deviation		Minimum		Maximum	
		2004	2018	2004	2018	2004	2018	2004	2018
Mobility in relation to the father	Categorical variable, with 0- Immobility; 1- Low Mobility; 2- Medium Mobility and 3- High Mobility	1.309	1.796	1.160	1.097	0	0	3	3
Mobility in relation to the mother	Categorical variable. with 0- Immobility; 1- Low Mobility; 2- Medium Mobility and 3- High Mobility	1.232	1.659	1.109	1.080	0	0	3	3
Sex	Dummy variable. with 1- Male and 0- Female	0.324	0.377	0.468	0.485	0	0	1	1
Age	Categorical variable. being 1- Up to 24 years old; 2- Between 24 and 30 years; 3- Over 30 years old	1.563	1.921	0.709	0.834	1	1	3	3
Skin color/Race	Categorical variable. being 1- White; 2- Black; 3- Brown; 4- Yellow and 5- Indigenous or of indigenous origin.	1.489	1.867	0.922	0.991	1	1	5	5
Income	Categorical variable. 1- From 1-3 minimum wages; 2- More than 3 to 10 minimum wages; 3- More than 10 to 30 minimum wages and 4- More than 30 minimum wages.	2.225	1.567	0.808	0.644	1	1	4	4
Family financial help	Categorical variable. 1- Receives financial assistance from the family; 2- Does not receive financial assistance from the family; 3- Helps the family financially	1.284	1.720	0.651	0.895	1	1	3	3
Brazilian regions	Categorical variable. 1- North; 2- Northeast; 3- Southeast; 4- South and 5- Midwest	3.172	3.097	0.867	0.981	1	1	5	5
Academic organization	Dummy variable. with 1- public institution and 0- a private institution	0.312	0.162	0.463	0.368	0	0	1	1
Scholarship or Financing	Categorical variable. for 2004: 1- Did not have a scholarship or financing or had another type (not identified) to cover the course expenses; 2- Obtained Fies; 3- Had a full or partial scholarship, offered by the institution or external entities. For 2018: 1- Did not receive any type of scholarship or financing; 2- Obtained ProUni (full or partial); 3- Obtained Fies; 4- Obtained Fies and partial ProUni; 5- Had a scholarship, offered by the state, district or municipal government, the institution itself or external entities.	1.461	2.263	0.784	1.05	1	1	3	6
Entry by quota policy	Dummy variable, 1- admission to the undergraduate course through Quotas and 0- otherwise		0.241		0.428		0		1
Teaching Modality	Dummy variable, with 1- taking a distance course and 0- face-to-face course		0.139		0.346		0		1

Source: Elaborated by the authors.

The inclusion of the variables gender, age, skin color/race, income, family financial aid, Brazilian regions, administrative category of the educational institution, scholarships and financing, Quotas, and Distance

Education were selected based on previous studies (ATHIAS & MATOS, 2013; Carvalho & Waltenberg, 2015; Chen et al., 2019; Junior et al., 2013; Longo & Vieira, 2017; Marteleto et al., 2016), which have shown, empirically or theoretically, that such variables can increase or decrease the likelihood of intergenerational education mobility between parents and children. In Table 2, to show the panorama of cases of intergenerational mobility at each of the levels used, the percentages of mobility by level are presented.

Table 2: Percentage of Cases of Intergenerational Mobility According to the Levels of Mobility in Relation to the Father and Mother for those of 2004 and 2018

Mobility Levels	2004 Mobility in Relation to the Father	Mobility in Relation to the Mother	2018 Mobility in Relation to the Father	Mobility in Relation to the Mother
	Percentage	Percentage	Percentage	Percentage
Immobility	32.33	32.09	13.65	15.16
Low mobility	28.88	32.99	31.73	35.96
Medium mobility	14.48	14.37	16.18	16.94
High mobility	24.32	20.55	38.44	31.93

Source: Elaborated by the authors.

Empirical Strategy – Model: In the present study, the dependent variable is a discrete ordinal variable that ranges from the absence of mobility, when the value of the dependent variable is zero, up to three when the child of illiterate parents who has completed the early elementary grades at most, reached higher education. Due to the nature of the dependent variable, the ordered probit model was considered the most appropriate to estimate the chances of mobility (Cheema et al., 2019; Chen et al., 2019; Cyrenne & Grant, 2009). The model takes the form:

$Y_i^* = \beta^T X_i + \varepsilon_i \quad \varepsilon_i \sim N(0,1)$ (1)

$Y_i = 0, \ if \ Y^* > \propto_1$ (Student's mother/father has completed university) (1.1)

$Y_i = 1, \ if \ \propto_1 \geq Y^* > \propto_2$ (Mother/father has completed high school) (1.2)

$Y_i = 2, \ if \ \propto_2 \geq Y^* > \propto_3$ (Mother/father has completed elementary school) (1.3)

$Y_i = 3, \ if \ Y^* \leq \propto_3$ (Mother/father are illiterate or completed early grades of elementary school) (1.4)

In this article, Y_i is constructed based on the schooling of the students' mother and father; *Yi* is the four mobility levels, with zero representing immobility, that is, when the student's mother or father completed university and three the highest level of educational intergenerational mobility, when the child of illiterate parents or with only early elementary education graduates from university; *Xi* is a vector of explanatory variables that, in addition to controlling for personal characteristics, measures socioeconomic factors and opportunities as detailed in Table 1. The same model specification is used to separately estimate educational mobility in relation to the father and in relation to the mother for the years 2004 and 2018, respectively. In addition to the results of the Ordered Probit model, it is necessary to estimate the marginal effects, given that the coefficients of the Probit models only reveal the direction of the effect and not the magnitude of that effect. Formally, the marginal effects can be expressed as follows:

$E_t = \Phi(\beta_i X_i)$ (2)

$\frac{\partial E_i}{\partial X_i} = \beta_i \Phi(\beta_i X_i)$ (3)

The coefficients of the marginal effects indicate the extent to which a 1% change in the independent variable causes a change in the dependent variable. The results of the estimates are presented below.

4. Analysis of the Results

In general, the results show that men; over 24 years of age; blacks, browns or mulattos and indigenous people (compared to whites); who do not receive financial assistance from the family to support themselves or who financially help the family were more likely to have a higher level of mobility in relation to the father and mother. Likewise, those who were completing their studies at private institutions; located in the Southeast and South regions (compared to the North region); remained in higher education through a partial

scholarship from ProUni with the remainder of the monthly amount financed by Fies (compared to those without a scholarship or loans); who accessed via the Quota policy and study in the distance modality, are the groups that are most likely to represent a case of greater educational intergenerational mobility. The Probit Ordered model results allow the identification of the signs and significance of the coefficients.

But do not permit the extraction of the percentage of chances each variable has of increasing or decreasing the chances of intergenerational mobility. Thus, the main analyses will be performed based on the average marginal effects of each explanatory variable, presented in Tables 3 and 4, in relation to the years 2004 and 2018, respectively. Given a large number of results, they will be described according to the order of the explanatory variables used in the model. The emphasis of this explanation lies on the chances of high mobility in relation to the father and in relation to the mother, because high levels of mobility generate more concrete conditions for the cycle of poverty to be interrupted and, in the long run, lead to decreased inequality (Carvalhaes & Ribeiro, 2019; Salata, 2018). Regarding gender, it can be seen that in both years, men were less likely to represent higher-level mobility cases than women.

This result shows male higher education graduates were more likely to be children of fathers and mothers with higher or secondary education. Therefore, it can be affirmed that there is a greater educational persistence for these individuals, associated with the maintenance of socioeconomic status (Pero & Szerman, 2022). This result is in agreement with the literature that shows parents with university degrees tend to contribute more, encouraging their children to also complete this educational level. This incentive can stem from the awareness of the value of education or the willingness to invest more financial, social and cultural capital in the lives of their children so that they have at least the same level of education as themselves (Checchi, 2006; Mahlmeister et al., 2019). The results may also be providing evidence of the growth of a gender educational gap, with women of all classes studying more than men, while boys, especially those from the poorest classes, maybe drop out of school before completing high school. In fact, women between 18 and 29 years old have 11.6 years of study, while for men, this rate is 10.9 (below the Brazilian average) (INEP, 2019). According to the report developed by (OECD, 2018), women are 34% more likely to graduate from higher education, although they have greater difficulty in finding employment.

Women university graduates were more likely to be daughters of parents with less education. According to (Paschoal, 2005), women, especially from younger cohorts, tend to be more educated than men and older people. This occurs despite the fact women face a higher cost (financial and personal effort); because they have to reconcile studies with domestic chores, face family resistance, as well as there, are lower expectations of return in the labor market. Over the past few years, women have become the majority in higher education. In 2004, men, when compared to women, were 4.49% less likely to represent a case of high mobility in relation to the father and 3.79% less in relation to the mother. It appears that this difference, in relation to women, decreased in 2018, with the reduction being greater for mobility in relation to the father, showing that the graduating men, the sons of fathers without schooling or only with the early grades of elementary school are receiving greater incentives to enter higher education. Regarding age, it is interesting to note that in 2004 and 2018, graduates over 30 years old stood out in terms of mobility. In both years, the student population over 24 years of age showed a significantly higher chance of representing a case of high mobility.

But the students over the age of 30 years remain the highlight. In 2004, university graduates over 30 were 28.7% more likely to have a father with no schooling or early years of elementary school and 33.6% more to have a mother without schooling or early years of elementary school than the younger graduates. In 2018, the differences between the age groups in the chances of representing cases of high mobility decreased, however, those over 30 years of age were still 18.8% more likely to have a father, and 23.9 % more likely to have a mother with little or no formal education. Notably, the chances of high mobility were greater in relation to the mother than to the father in both analyzed years. However, the percentage of chances of representing cases of mobility between ages decreased over time. These results demonstrate that Brazil has not yet been able to meet the historical demand for higher education, nor ensure that people enter higher education at the recommended age. In addition, people with less educated parents still need to wait longer to receive the opportunity to enter a university. In this context, the expansion of places is allowing individuals whose parents have little education, of different age groups, to resume their studies even though they have to wait longer to enter and/or have to find a job to support themselves.

Table 3: Marginal Effects of Independent Variables on Mobility in Relation to Father and Mother for 2004

Base Category	Variables	Immobility		Low Mobility		Medium Mobility		High Mobility	
		Father	Mother	Father	Mother	Father	Mother	Father	Mother
Sex - Female	Sex - Male	0.0526***	0.0550***	0.00287***	1.74e-05	-0.0106***	-0.0139***	-0.0449***	-0.0412***
Age- Up to 24 years	Between 24 and 30 years	-0.0780***	-0.101***	-0.00335***	0.00125***	0.0179***	0.0293***	0.0635***	0.0704***
	Over 30 years	-0.245***	-0.289***	-0.0737***	-0.102***	0.0325***	0.0554***	0.287***	0.336***
Color/Race- White	Black	-0.0936***	-0.0986***	-0.0133***	-0.00979***	0.0168***	0.0236***	0.0901***	0.0848***
	Brown	-0.0576***	-0.0600***	-0.00554***	-0.00264***	0.0112***	0.0149***	0.0520***	0.0477***
	Yellow	0.0415***	-0.0138	-0.000497	0.000197***	-0.00912***	0.00353	-0.0319***	0.0101
	Indigenous	-0.0504***	-0.0470***	-0.00440*	-0.00126	0.00988***	0.0118***	0.0449***	0.0364***
Family Income- Up to 3 MW	From 3 to 10 MW	0.0691***	0.0667***	0.0220***	0.0139***	-0.0111***	-0.0162***	-0.0800***	-0.0645***
	Between 10 to 30 MW	0.251***	0.194***	0.0186***	0.00624***	-0.0548***	-0.0507***	-0.215***	-0.149***
	More than 30 MW	0.461***	0.332***	-0.0529***	-0.0358***	-0.108***	-0.0876***	-0.300***	-0.209***
Receives financial assistance from the family	Does not receive financial assistance from the family	-0.0992***	-0.106***	-0.0147***	-0.0120***	0.0185***	0.0263***	0.0954***	0.0917***
	Helps the family financially	-0.121***	-0.126***	-0.0215***	-0.0183***	0.0212***	0.0304***	0.121***	0.114***
North Region	Northeast Region	0.0487***	0.0503***	0.000811	-0.00543***	-0.0103***	-0.0131***	-0.0393***	-0.0318***
	Southeast Region	0.00308	-0.0381***	0.000200	0.000482	-0.000613	0.00967***	-0.00267	0.0280***
	South Region	-0.00443	-0.0378***	-0.000326	0.000494	0.000874	0.00958***	0.00389	0.0277***
	Midwest region	-0.00556	-0.0147	-0.000416	0.000587	0.00109	0.00377	0.00488	0.0103
Private Educational Institution	Public Educational Institution	0.0206***	0.0205***	0.00112***	6.50e-06	-0.00415***	-0.00516***	-0.0175***	-0.0153***
No scholarship or loan	Has a loan (Fies)	-0.0617***	-0.0323***	-0.00637***	-0.000743**	0.0118***	0.00809***	0.0563***	0.0250***
	Receives a scholarship	-0.0257***	-0.0225***	-0.00156***	-0.000241	0.00520***	0.00567***	0.0220***	0.0171***

Source: Elaborated by the authors.
Notes: The numbers in parentheses are standard errors. *, **, *** Significant at the levels of 10%, 5% and 1%, respectively.

Table 4: Marginal Effects of the Independent Variables on Mobility in Relation to Father and Mother for the Year 2018

Base Category	Variables	Immobility		Low Mobility		Medium Mobility		High Mobility	
		Father	Mother	Father	Mother	Father	Mother	Father	Mother
Sex - Female	Sex- Male	0.0229***	0.0246***	0.0191***	0.0175***	-0.00131***	-0.00427***	-0.0407***	-0.0379***
Age- Up to 24 years	Age- Between 24 and 30 years	-0.0386***	-0.0562***	-0.0268***	-0.0292***	0.00525***	0.0149***	0.0601***	0.0705***
	Age- over 30 years	-0.0969***	-0.137***	-0.0938***	-0.123***	0.00267***	0.0211***	0.188***	0.239***
Skin color/Race- White	Black	-0.0206***	-0.0206***	-0.0175***	-0.0152***	0.00118***	0.00349***	0.0369***	0.0323***
	Brown	-0.0232***	-0.0170***	-0.0200***	-0.0123***	0.00122***	0.00295***	0.0420***	0.0263***
	Yellow	0.00959***	0.00564**	0.00701***	0.00360**	-0.00097***	-0.00111**	-0.0156***	-0.00813**
	Indigenous	-0.00440	-0.0151**	-0.00345	-0.0108*	0.000363	0.00265**	0.00748	0.0232**

	From 3 to 10 MW	0.0918***	0.0968***	0.0904***	0.0794***	-0.00502***	-0.0179***	-0.177***	-0.158***
Family Income- Up to 3 MW	Between 10 and 30 MW	0.286***	0.276***	0.118***	0.0900***	-0.0543***	-0.0704***	-0.350***	-0.295***
	More than 30 SM	0.390***	0.408***	0.0901***	0.0447***	-0.0817***	-0.106***	-0.399***	-0.346***
Receives financial assistance from the family	Does not receive financial assistance from the family	-0.0263***	-0.0344***	-0.0221***	-0.0251***	0.00170***	0.00623***	0.0467***	0.0533***
	Helps the family financially	-0.0383***	-0.0449***	-0.0342***	-0.0347***	0.00164***	0.00752***	0.0709***	0.0721***
North Region	Northeast Region	-0.00345*	-0.0141***	-0.00263*	-0.00692***	0.000299*	0.00325***	0.00577*	0.0178***
	Southeast Region	-0.00497***	-0.0429***	-0.00382***	-0.0251***	0.000420**	0.00894***	0.00836***	0.0590***
	South Region	-0.0316***	-0.0694***	-0.0278***	-0.0476***	0.00131***	0.0125***	0.0581***	0.104***
	Midwest region	-0.0181***	-0.0331***	-0.0148***	-0.0182***	0.00118***	0.00716***	0.0317***	0.0441***
Private Educational Institution	Public Educational Institution	0.00988***	0.0192***	0.00827***	0.0137***	-0.00056***	-0.00334***	-0.0176***	-0.0296***
No scholarship or loan	Has a loan (Fies)	0.00912***	0.0123***	0.00747***	0.00855***	-0.00058***	-0.00219***	-0.0160***	-0.0187***
	Receives a scholarship (non-federal)	0.00581***	0.00484***	0.00483***	0.00350***	-0.00034***	-0.000824***	-0.0103***	-0.00751***
	Receives a ProUni scholarship	-0.00426***	0.00318**	-0.00372***	0.00232**	0.000182***	-0.000535**	0.00780***	-0.00496**
	Receives Partial ProUni and Fies	-0.0147***	-0.0118***	-0.0135***	-0.00931***	0.000347***	0.00177***	0.0278***	0.0193***
	Other financing	0.00324	-0.00234	0.00273	-0.00175	-0.000178	0.000379	-0.00579	0.00371
Did not enter higher education through Quotas	Entered higher education through quotas	-0.0169***	-0.0149***	-0.0142***	-0.0107***	0.000966***	0.00259***	0.0301***	0.0230***
On-campus Teaching Modality	Teaching Modality – online/distance Learning	-0.0349***	-0.0187***	-0.0293***	-0.0134***	0.00200***	0.00325***	0.0622***	0.0289***

Source: Elaborated by the authors.
Notes: The numbers in parentheses are standard errors. *, **, *** Significant at the levels of 10%, 5% and 1%, respectively.

The results referring to skin color/race show that, in relation to whites, graduates who declare themselves to be black or brown have significantly less chance of representing cases of immobility or low mobility and significantly greater chances of representing cases of medium and high mobility in the studied years. This reveals that the students from those groups who reach higher education, are children of parents with low levels of education and that these students are the first generation to have the opportunity to invest in human capital. Meanwhile, the graduates who declared themselves indigenous, in addition to being less represented in the population of university students, reduced the chances of being cases of high mobility between 2004 and 2018. These results are explained by the fact that the cohort of young Brazilians who started high school and higher education after 2002 was the first to be exposed to an institutionalized set of educational and social policies aimed at including minorities in education. The expansion of minority access to higher education may have led to a narrowing of the racial gap in Brazilian higher education (Marteleto et al., 2016). Regarding income, one can see that higher education is a persistent feature among the highest income brackets.

In 2004 and 2018, for the group earning between 3 and 30 minimum wages, mobility tends to be low. Thus, when graduates from families with incomes of more than 30 minimum wages are compared with those of families with income of up to 3 minimum wages, it is apparent that in 2004 those with higher income have a 30% less chance of representing a case of high mobility in relation to the father and 20.9% less chance in

relation to the mother. By 2018 these percentages are even higher, with 39.9% less chance of high mobility in relation to the father and 34.6% less in relation to the mother. Therefore, restricted income imposes barriers to accessing higher education, although children spend more time in school in relation to parents (Mahlmeister et al., 2019) and government policies, namely ProUni and Fies, have sought to reduce this disparity. The variable intended to control for the financial situation of the student in college, whether receiving assistance from the family or having to contribute financially towards maintaining family household expenses, shows that the latter are more likely to be cases of mobility than those who received parental financial support. Longo & Vieira (2017) found similar results for adolescents aged 16 to 19.

The possibility of completing elementary school, suggests that having a job may allow individuals to invest in their own education. This result may also be associated with the current set up of Brazilian higher education, which offers various forms of access and modes of study, as well as allowing people who did not have the opportunity to study at the recommended age to return to study by attending distance education or evening courses. This means that married adults with children can complete higher education, even if their parents had little or no formal education. As for the Brazilian regions, the expansion of access to higher education that occurred between the years 2004 and 2018 was found to have increased the chances of mobility in all the regions in relation to the North region, but particularly in the Northeast and Midwest regions. In 2004, only graduates from institutions located in the Northeast region were statistically more likely to represent cases of greater intergenerational mobility compared to the father, when compared to the North region. In 2018 there was a clear inversion in terms of the chances of mobility between regions. In general, we can say that mobility levels improved between 2004 and 2018 and that this mobility was ensured, including, through scholarships and student loan programs, among the university graduate of 2004.

Those who received funding from the federal government (Fies) had 5.63% more chances of representing a case of high mobility in relation to their father and 2.5% more in relation to their mother than those who had no scholarship or funding. Those who obtained (non-federal) scholarships**,** on the other hand, had the chances increased by 2.20% in relation to the father and 1.71% in relation to the mother when compared to the same group. By 2018, there were more funding options available for those who wanted to enter higher education, such as ProUni, which offers full or partial scholarships to individuals from low-income families to attend private education institutions. Moreover, students who only receive a partial scholarship can apply for a low-interest Fies loan to cover the rest of the costs. In this way, Fies and ProUni have become tools for greater social inclusion in higher education. Those students with partial ProUni scholarships plus Fies loans were found to have the greatest chance of representing a case of high mobility, when compared to those who have no funding or a non-federal scholarship, with 2.78% more chances of high mobility compared in relation to the father and 1.93% in relation to the mother. When analyzing the chances of high mobility among those paying for their courses with Fies loans alone, it was found that in 2018, they presented 1.6% fewer chances of high mobility in relation to the father and 1.87% fewer chances in relation to the mother.

This result is contrary to that found in 2004 – when those who obtained Fies loans were more likely to have high mobility than those who had neither a scholarship nor financing. This shows that in 2004, given the absence of other programs, such as ProUni, the children of parents without schooling had Fies as a gateway to higher education, which changed in 2018, due to the existence of full and partial scholarships via ProUni. Making Fies a more viable option for those who are able to afford the full course costs when they finish and can guarantee to offer financial institutions. Graduates who attended public institutions were less likely to have medium and high intergenerational mobility than those who attended private institutions in both the analyzed years. In 2004, those who studied at a public institution were 1.75% less likely than those who attended a private university to have high mobility in relation to the father and 1.53% less in relation to the mother. In 2018, the percentage of fewer chances of mobility in relation to the father of graduates in public institutions was similar to that of 2004 (1.76%). When considering the chances of high mobility in relation to the mother, this percentage increased, with those that studied in public institutions having 2.96% less chance of high mobility, compared to those attending private institutions.

This result reflects the '*elitization*' of Brazilian public higher education, which, according to (Salata, 2018), consists of a smaller number of high prestige public institutions, which are difficult to access due to the intense competition for places and a large majority of lower prestige private institutions, which offer

relatively low enrolment costs and less competition for places. In Brazil, many of the graduates from public institutions, especially those taking more competitive courses, have parents who completed higher education and have an income level capable of bearing the costs of a private university. However, they invest educationally in their children from infancy, which produces in the competitive entrance exams for places at public institutions (Salata, 2018). This situation ends up making private institutions more accessible, either through scholarships, loans or own resources. It was also found that those who entered higher education through the quota reserved places, being related to income, having studied in public or private schools with a high school scholarship, or skin color/race were more likely to present a higher level of mobility in relation to new students entering through universal means. Those who entered via the quota program in 2018 were 3.01%.

More likely to be highly mobile cases in relation to the father and 2.30% more likely in relation to the mother. This result shows that although access to university/college remains far from universal in Brazil, policies based on race and class have improved opportunities for higher education in the last fifteen years and the massive expansion of opportunities at this level of education has increased access for minorities to higher education institutions (Marteleto et al., 2016). It was also evident that the graduates who took distance learning courses, compared to those who attended in person, had 6.22% more chances of high mobility in relation to the father and 2.89% in relation to the mother. This can be explained by the fact that distance learning courses are more accessible than face-to-face courses, having a simplified selection process, while the flexible hours facilitate the combination of work and study. Finally, it is worth noting the variables that show the greatest differences in chances between groups of presenting cases of high mobility were in 2004: age (those over 30 years old, compared to those under 24 years old), family income (those with a family income of more than 30 minimum wages, compared to those with an income of up to 3 minimum wages) and the family's financial aid (those who helped the family financially, compared to those who helped by the family). In 2018, the same variables and groups appear are maintained, with the addition of the variable region (those concluding an institution in the South region, compared to those in the North region).

5. Conclusion and Recommendations

Brazilian higher education has undergone significant changes in recent decades, among them, one can mention the expansion of access, together with policies of affirmative action, financing and restructuring. Being considered essential in promoting a more egalitarian society, completion of this level of education is associated with higher income and social ascension. Therefore, this study analyzed the levels of intergenerational mobility of education among graduates of higher education in the years 2004 and 2018 by estimating an Ordered Probit model. It should be noted that the following conditions are (separately) linked to a greater chance of high intergenerational mobility in relation to parents: being a woman; being over 24 years old; being from a low-income family; being black, brown or indigenous; financially helping the family; studying in a private institution; have a partial ProUni scholarship and financing the rest of the fees through a Fies loan; having entered higher education through quotas and completed higher education via distance learning. An outstanding point was the difference in the level of mobility in relation to the father in 2004 and 2018, and in 2004, most graduates had parents who had completed higher education, while in 2018, most of the parents of graduates had little or no formal education.

Furthermore, notably, it was women, the daughters of parents with little or no formal education, more than men from the same parental group, who were able to take advantage of the expansion of places and affirmative policies available for higher education that occurred in this period. However, we cannot overlook the fact that access to higher education is still limited to a small part of the population. Thus, the increase in the percentage of cases of high mobility should be seen as the beginning of an objective to be pursued, one in which supposedly circumstantial variables, such as family income, skin color/race, region, parental education, do not represent the obstacles to accessing higher education and getting compatible jobs, with fair wages. Thus, the findings of the present study identify the characteristics associated with increased intergenerational mobility and can be used to decide to whom public policies should be directed when aiming to reduce the inequality of opportunities and access to higher education. Identifying these characteristics and groups makes it possible to design focused actions for individuals and families with similar characteristics, but who have not yet had access to mobility. Since the results showed higher chances of medium and high

mobility among non-white people, over 30 years old, studying in private institutions and beneficiaries of some government programs.

The following public policies are recommended: 1) Aiming to reach a large number of young people and adults living in large families in situations of vulnerability, we recommend the expansion of the current upper limit of two before taxes minimum wages per family as a condition to access to PROUNI; 2) Creation of more specific programs, design for example for people over 30 who did not have the opportunity to access higher education when young; 3) Adopt programs that start in childhood or adolescence, such as Head Start and the Quantum Opportunity Program implemented in the United States intending to promote the intellectual, social and physical development of preschool-age children in contexts of social vulnerability. And the Quantum Opportunity was also implemented in the United States but focused on 9th-grade students with low grades. These examples can serve as insight for Brazilian public policies to encourage high intergenerational mobility in education. Ultimately, it should be noted there is a need for further investigation into whether obtaining a university degree is enabling graduates, in cases of high mobility, to obtain jobs suited to that level of education. Another issue is the quality of the institutions and courses that individuals with high mobility are attending, as employability and wages are also linked to these issues.

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