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Fathers' schooling and children's achievements in adulthood: analysis of Brazilian data

Synopsis of Indicators

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Synopsis of Indicators | nº 1

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*Oppen Social

PRESENTATION

Like father, like son. Since the Lusíadas, this has been a known fact – that children "inherit" qualities from their parents. Around here, in addition to this expression, there is another: "he's a chip off the old block."

They are popular expressions to designate similarities between parents and children. In general, these expressions are associated with physical similarity, gestures, behaviors, expressions, habits, and customs. They often refer to temperaments such as obstinacy, stubbornness, bravery, generosity, affection, and others.

Never, however, have they been used to associate the schooling of one to that of the other, or to associate the schooling of parents with the achievements of their children.

The fact is that in societies where universal public education was established and consolidated, these two events - the schooling of parents and children – were expected to be completely independent, so that the outcome of a person's schooling was independent of their parents' school history.

This is not exactly the case in Brazil. To a large extent, an individual's school career is strongly associated with their parents' schooling. But not just the school trajectory. As will be shown in this Report, the father's education is strongly associated with his children's income, position in the occupation, and other results.

Based on data from IBGE's National Household Sample Survey (PNAD) at two points in time (1996 and 2014), statistics are presented that associate the fathers' education with the various dimensions of their children's lives.

Comparative results are also presented between these two moments in time. After all, almost two decades have passed between the first survey and the second. And, as will be shown, in this period Brazil has changed. And it has changed for the better.

We are still far from being a society that offers its less fortunate members chances of schooling similar to those of more privileged social groups. Thus, for example, in 2014, practically 70 out of every 100 children whose fathers held a bachelor's degree also reached this level of schooling, while only 4 out of every 100 reached this level if their fathers had no schooling whatsoever.

This and many other statistics are presented and commented on in this report.

We hope you enjoy this reading selection.

Paulo Tafner
Diretor-Presidente

SUMMARY

EXECUTIVE SUMMARY

- Between 1996 and 2014, there was an improvement in the structure of intergenerational **educational mobility** in Brazil. In 2014, the intergenerational educational persistence indicator showed much lower influence of the fathers' level of schooling on the children's level of schooling than in 1996.

- This is because there was an increase in absolute upward educational mobility (weakly), from 54.4% in 1996 to 74.4% in 2014, indicating that more people exceeded their fathers' level of schooling or remained at the same level, in cases of fathers with higher education. However, Brazil still faces a **barrier in complete High School** level or incomplete Undergraduate level, which limits the number of people who complete higher education. Only children of fathers with at least a college degree are more likely to surpass this barrier, rather than stop before or remain in it.

- **In the labor market**, the chances of children reaching the most sophisticated occupational stratum increase as fathers are more educated. Children whose fathers have higher education are 3.3 times more likely to be in the stratum of more sophisticated occupations than the average population and almost 9 times more likely than the children of uneducated fathers.

- When comparing the positions between the occupational strata in the first job and in the main job, two moments in the life of the same individual, there is an improvement in the situation in the labor market for all children. However, the leap is higher for children of fathers holding a bachelor's or higher degree.

- Individuals whose fathers reached complete High School level or incomplete Undergraduate level are 3.7 times more likely to get a first job employed with working papers than children of fathers with no schooling. This difference is even greater among Blacks – at 4 times the rate.

- There is a reduction by almost half in the probability of being employed without working papers for children whose fathers hold at least a bachelor's degree, as compared to children of unschooled fathers.

- **Looking at income**, there is a strong relationship between the fathers' level of schooling

and the household income of children. While 12.0% of children of fathers with no schooling are among 20% of households with the highest income in Brazil, for children of fathers with an incomplete Elementary School level this probability rises to 28.7%. At the opposite extreme, if the fathers hold a bachelor's or higher degree, that probability rises to 80.6%.

- More than a quarter of the children of unschooled fathers have a chance of being in poverty or extreme poverty situations, according to World Bank guidelines for extreme global poverty and for poverty in upper-middle-income countries. This situation is even more serious among Blacks.

- On the other hand, there is 10.2 times less chance of children of fathers with college degrees being among individuals with 20% lowest per capita household income levels in Brazil, when compared to children of unschooled fathers.

- When dealing with the **housing conditions** of individuals, the probability that the population analyzed does not have adequate sanitation in the household is 34.9%, with more than half of the children of unschooled fathers (50.7%) facing the problem, while the probability for descendants of fathers holding at least a bachelor's degree is 11.5%.

- The higher the father's level of schooling, the greater the probability of living in a household with water supplied through the general distribution network, with 77.4% for children of unschooled fathers and 97.2% for children of fathers with a college degree.

- In 10.5% of households there is no direct or indirect waste collection, but this probability is decreasing as the fathers' educational level increases. The lack of access to waste collection has reduced over time - in 1996 it was 25.3%.

- There is a strong relationship between the fathers' educational level and access to sanitary sewage systems via a sewage or rainwater collection network - the conditions of sewage disposal are worse the lower the fathers' schooling.

- Ownership of sanitary facilities in the household increased over time and became widespread, reaching 97.9% in 2014. In 1996, the lack of sanitary facilities was 9.0%, with probability of occurrence mainly among children of fathers with no schooling or with incomplete Elementary or Junior High School levels.

- Among children of unschooled fathers, there is a probability of 51.1% not having a water filter, while this same probability, for children of fathers holding bachelors' degrees or higher is 29.4%.

- The probability of living in households with a density of less than two residents per dormitory is higher among children of more educated fathers – 73.6% for children of fathers who hold a bachelor's degree or higher and 53.4% for children of fathers with no schooling.

- In relation to the expenditure of part of the household income on rent, between 1996 and 2014 there was a reduction in the probability of committing 30% or more on rent – it fell from 33.2% to 24.8%.

- When we focus on **household consumption,** we notice that there is a strong relationship between the lack of Internet access in the household and the father's low level of schooling. Meanwhile, as the fathers' educational level increases, the more likely the individual is to have access to broadband Internet. Children of unschooled fathers had a 55.0% probability of not accessing the Internet in the household, while the probability that they had a broadband connection was 29.6%. For children of fathers holding a bachelor's degree or higher, these odds were 4.9% and 89.4%, respectively.

- In addition, among those who had access to the Internet in the household, children of fathers with a bachelor's degree or higher had a 91.9% probability of accessing via microcomputer, television, or tablet, while this probability was 32.7% for children of fathers with no schooling.

- The highest probability of owning a microcomputer and tablet is among children of more educated fathers, reaching 55.7% for children of fathers with a bachelor's degree, compared to 8.0% for children of fathers with no schooling.

- In 7.9% of households with children whose fathers have no schooling, residents have access to neither a landline phone connection nor a cell phone. On the other hand, practically all the children of fathers with bachelors' degrees or higher have a telephone at home.

- The probability of not owning a washing machine is also high for children of uneducated fathers - 54.3%, while for children of fathers with a bachelor's degree or higher, it is only 6.5%.

- The probability of lacking a refrigerator or freezer decreased between 1996 and 2014: in the first year of the survey, it was 17.9%; the lower the fathers' educational level, the greater the likelihood that the children would have neither a refrigerator nor a freezer. In 2014, the probability of such a lack for the analyzed population dropped to 1.6%.

- Exclusive car ownership is also strongly asso-

ciated with the fathers' educational level: the higher the level of education, the greater the likelihood that their children will own only cars, reaching 74.8% for children of fathers holding a bachelor's degree. In contrast, the lower the fathers' educational level, the greater the likelihood of an absence of either motor vehicle; motorbike or car - 41.1%, for children of unschooled fathers.

- Considering **household structure and fertility of daughters**, the data suggest that the higher the fathers' schooling, the greater the likelihood that their children will reside in households with fewer people. Among children of fathers who have an undergraduate degree or higher, there is a greater probability of their residing alone, compared to children of unschooled fathers - 8.5% compared to 6.0% - and they are less likely to reside in households with five or more residents (14.2% compared to 23.9% for children of unschooled fathers).

- Analysis of the household arrangement by sex shows that men are less likely to reside in a single parent arrangement with child(ren) than women – 7.8% compared to 16.5%. Among children of fathers with a bachelor's degree or higher, the odds are 7.9% and 14.0%, in the same order. Among children of unschooled fathers, the probability for women is more than twice that found for men, 17.5% compared to 6.5%.

- Women, daughters of fathers with no schooling, have a 47.0% probability of having three or more children. Daughters of fathers with incomplete Elementary or Junior High School education were more likely to have two children (29.1%). For the remainder, the greatest probability was that of not having any children, a result that grows with the rise in the educational level of the fathers, reaching 43.0% for daughters of fathers with bachelor's or higher degrees, compared to 12.6% for women with unschooled fathers.

- Finally, among women who had live-born children, the probability of not having a stillborn child increases according to the rise in the educational level of the fathers, going from 83.0% for daughters of unschooled fathers, to 96.6% for daughters of fathers with bachelors' degrees or higher.

GLOSSARY

Absolute upward educational mobility (weakly)[1] describes the portion of children who reached a higher level of education than that of their parents or remained at the same level of education as their parents, provided the latter had a bachelor's degree or higher.

Absolute upward medium-distance educational mobility[2] depicts the portion of children, whose parents were unschooled or had incomplete Elementary or Junior High School education, and who at least completed the High School level.

Intergenerational mobility in education[3] occurs when individuals reach different levels of schooling than those achieved by their parents – or other ascendants. Therefore, it is that mobility that occurs between generations. In this report we will deal with the generations of children and parents. Thus, the situation of intergenerational mobility in education can be said to be absolute upward mobility when children reach higher levels of education than their parents, and absolute downward mobility, when children reach lower levels of education than their parents. For cases in which there is no intergenerational mobility in education, that is, when children reach educational levels equal to those of their parents, it is said that there is immobility.

Intergenerational persistence in education[4] measures the degree of determination that the level of schooling of parents has had on the level of schooling of their children, in years of schooling.

Intergenerational privilege[5] portrays the portion of children whose parents had a bachelor's degree or higher and who themselves achieved a bachelor's degree or higher.

Low schooling "trap"[6] occurs when more than 50% of the children of unschooled parents reach, at most, the incomplete Elementary or Junior High School level.

Social mobility[7] the variation that occurs in socioeconomic status (in education, occupation, income and in other measures correlated with well-being) of individuals. It can be intergenerational – between parents and children, or grandchildren – or intragenerational - within the individual's own life course.

[1] Adaptation of the Absolute upward mobility (weakly) indicator (World Bank, 2018).

[2] Inspired by the Absolute upward long-distance mobility indicator (IBGE, 2017).

[3] Concept presented, among several sources, by the World Bank (2018) and the OECD (2018).

[4] Adaptation of the Intergenerational persistence indicator (World Bank, 2018).

[5] Adaptation of the Intergenerational Privilege indicator (World Bank, 2018).

[6] Own elaboration.

[7] Concept presented, among several sources, by the World Bank (2018) and the OECD (2018).

INTRODUCTION

Measuring the degree of social mobility in a society requires choosing the social welfare proxy to be analyzed beforehand. While there is an abundance of income data that can be used to calculate inequality indicators, the availability of longitudinal databases that have sufficient time span to capture intergenerational links is much rarer. In most countries, the indicators of intergenerational income mobility are calculated indirectly, in the absence of observations of the bond between parent and child that would allow knowledge of the joint distribution of income for a sample that has national representativeness.

In the absence of such direct observation of the income of parent and child in Brazil, there is the option of using the relationship between the level of schooling of parent and child as an alternative to the indirect calculation of intergenerational income mobility. In Brazil, two PNAD supplements, from 1996 and 2014, allow this analysis.

The purpose of this Report is not to interpret the results found or to formulate a stronger or weaker hypothesis to explain the association between the father's schooling and the children's achievements in adulthood. The father's human capital, rented out in the labor market, becomes net labor income after taxes and transfers. Although the father's higher level of schooling, on average, implies higher income from work, this relationship depends on the schooling premium at each level of schooling. Roughly speaking, the father's schooling is strongly correlated with his income from work, which in turn is an important component of per capita household income and is associated with greater investment in the children's human capital. Yet, a parent's greater level of schooling influences their children's education through other channels. In very stratified societies, associations through marriage mean that a higher level of education for the father is generally correlated with a higher level of education for the mother (through the marriage). Thus, to the extent that women increase their participation in the workforce, the marriage becomes a mechanism to reinforce inequalities associated with per capita household income, with consequent re-

production of the former in the educational inequality of children - the higher the household income, the greater the investment in productive capacity building of children.

Per capita household income influences the accumulation of human capital for a number of possible reasons. First, to the extent that human capital cannot be pledged as collateral in a credit agreement, in the absence of private resources, financing is either subsidized as a student loan (for example, FIES), or it does not exist. Therefore, poor families are unable to access higher quality schools, usually private ones. These also have a higher opportunity cost to keep their children out of the labor market, which prevents, for example, their attending daytime schools, compelling them to attend night school. Second, insufficient household income prevents families from living in more affluent neighborhoods. In addition to less amenities, poor neighborhoods usually have greater shortage of quality public services (such as schools). The network of social interactions can also influence the child's expectations regarding the future and may implicate in the absence of positive references to serve as models of resilience.

Therefore, the education of the father and mother implies, on average, in higher per capita household income, which directly allows for greater accumulation of capacities for their children.

The education of the father and mother also influences the children's preferences (for more or less schooling; in the choice of more or less profitable professions; etc.). They also affect the child's average return on schooling in different ways. For example, more educated fathers and mothers tend to spend more quality time, and more often, with their children, which is crucial for the formation of cognitive and socioemotional capacities. Thus, more educated fathers and mothers give more direct support to their children's capacity building.

Finally, the level of schooling and the professional success of the children can be determined by hidden factors, unobservable in the usual questionnaires, such as values and culture, and which are transmitted within the family, such as the belief in individual effort, the appreciation for risk-taking, prudence in the face of important choices in life, etc. These factors can be associated with common decisions made by parents and children (such as doing an MBA). The mere correlation in this case will not indicate a causal relationship between the variables observed (father's and son's schooling; or father's education and son's income), but rather the existence of a common, unobservable factor – transmitted from father to son – that explains both the success of one and of the other.

Due to the existence of all these potential sources of intergenerational correlation of investment in human capital and well-being between fathers and children, this Report seeks to characterize the relationships, through graphs and transition matrices, with cutouts for birth cohorts; race or skin color; sex; and geographic location. We do this without speculating on the true causes that explain the joint distribution of the variables.

The aim of this first edition of the Synopsis of Indicators of the Institute for Mobility and Social Development – IMDS is to characterize the relationship between the father's level of schooling and the results obtained by his children in adult life. This characterization is presented in five chapters. They are: Intergenerational mobility in education; Position in the labor market, income earned by children as per their fathers' level of schooling; Housing conditions, access to basic sanitation, children's household structure and composition and fathers' level of schooling; Consumption of durable goods, access to telecommunication services and fathers' level of schooling; and Household arrangement, daughters' fertility, mortality of their descendants and the relationship with fathers' level of schooling. In these chapters, it will be possible to analyze the results according to different clippings, such as birth cohorts, sex, skin color or race, and territoriality.

The analyzed indicators were produced by IMDS, from the microdata of the National Household Sample Survey – PNAD of 1996 and 2014, and their supplements on socio-occupational mobility, made available by the Brazilian Institute of Geography and Statistics – IBGE. In the appendix of this publication, it is possible to find information about the treatment given to the sample in each of IMDS' indicator panels.

The first chapter aims to explore the relationship between the fathers' level of schooling and their children's, and to analyze aspects of intergenerational mobility in education in Brazil. The average schooling of Brazilians has grown approximately one year per decade in the last four decades if we compare people by year of birth. The average number of years of study for the generation born in the decade that began in 1940 was 5.3 years, compared to 10 years among those born in the 1980s. This performance is not extraordinary (Mexico, for example, increased six years of schooling for the same cohorts), but indicates the presence of absolute upward educational mobility.[8] Could it be that those who have achieved the greatest differences from their fathers are the children of more educated fathers, or have the greatest leaps been made by the children of less educated fathers? Educational inequality decreases significantly for the generation born in 1980, which is an indication that these intergenerational gains may be compatible with greater increases for children of less educated fathers.

The above paragraph discussed two moments (mean and standard deviation) of the

[8] View the IMDS dashboard with international comparisons from World Bank data at https://imdsbrasil.org/en/indicators-international/01/intergenerational-mobility-a-glance-at-brazil-in-the-world.

marginal schooling distributions of the children. To understand the evolution of intergenerational mobility in education, it is necessary to analyze the joint distribution of schooling of fathers and children. From the study of transition matrices, a classic tool for the analysis of intergenerational mobility, we sought to highlight characteristics of this mobility according to each level of education of the fathers. In addition, synthesis indicators were used to summarize the situation of intergenerational social mobility in the country and its evolution between 1996 and 2014.

With education as a starting point, the remaining chapters are dedicated to exploring the relationships between other children's socioeconomic outcomes and the fathers' educational level, in order to verify whether there is a relationship between the fathers' level of schooling and their children's standard of living as adults. In the second chapter, we seek to characterize the relationship between the fathers' level of schooling and the position that their children occupy in the labor market, as well as the income they receive. Insofar as the children's education is strongly correlated with that of the father's, it is not surprising that this association extends to the children's wages and per capita household income results.

The third chapter sets out the relationship between the fathers' level of schooling and housing conditions, access to sanitation services, and structure and household composition of children. The fourth chapter explores the relationship between the educational level of fathers, and consumption of durable goods and access to telecommunication services by their children. Finally, the fifth chapter relates the father's level of schooling with the fertility of their daughters and the mortality of their descendants. With more information and resources, it is possible to have more access to family planning, prenatal care, and child health. These chapters also carry out analyzes that compare the results in 1996 and 2014.

LIST OF FIGURES

PART ONE

1 Intergenerational mobility in education

CHAPTER HIGHLIGHTS:

- The evolution of intergenerational persistence in education between 1996 and 2014 shows that there has been an improvement in the structure of intergenerational mobility in education in Brazil. In 2014, the influence of the fathers' level of schooling on their children's level of schooling was 0.58, less than that of 0.76 in 1996. Therefore, this indicator shows a lesser dependency between the levels of schooling of fathers and their children.

- This is due to an increase in absolute upward educational mobility (weakly). In 1996, this indicator was 54.4%, that is, for every 100 people 25 to 64 years of age, 54 achieved a higher level of education than that of their fathers or the same level, provided that was a bachelor's degree or higher. In 2014, for every 100 children, 74 exceeded their fathers' educational level or remained at the same level, in the case of fathers with university degrees.

- However, there is still a barrier in the complete High School level or incomplete Undergraduate level, which limits the number of people who complete the college level. Children of fathers who at least hold a bachelor's degree are more likely to overcome this barrier.

- It is possible to notice this by observing the "intergenerational privilege", whose value is 69.7% in Brazil, that is, for every 100 children of fathers who hold bachelor's degrees or higher, there is the probability that 69 of them also attain bachelors' degrees or higher.

- But there is still a high percentage (59.6%) of children of unschooled fathers who are likely to be trapped in a kind of low schooling "trap"- with 17.5% remaining unschooled and 42.1% reaching, at most, the incomplete Elementary or Junior High School level.

- Although there has been general improvement in the mobility indicators for the Brazilian population, we observe slightly different advances, depending on the demographic group that we analyzed.

To return to the summary

1.1. The relationship between the level of schooling of parents and children

Among socioeconomic results of interest in social mobility studies is education. Its importance is evident in studies like that of Langoni (1973), which points out a strong correlation between educational and income levels in Brazil, showing the importance of education to deal with income inequalities in the country. Several authors emphasize the significant influence that the education of fathers has on the level of schooling of their children[9].

Thus, to start the study on intergenerational mobility in education, the first step in the analysis proposed here is to verify the levels of schooling of both parents and children in the *transition matrix*. This matrix is basically a presentation, in rows and columns, of the percentage distribution of schooling of parents and children. In general, the parents' schooling is shown in rows and that of children in columns. Thus, for each level of schooling of parents (in the lines), the percentage distribution of the children's levels of schooling is presented (in the columns). The diagram below exemplifies how a transition matrix is constructed step-by-step (Diagram 1.1).

Considering the universe of children whose parents were unschooled (first line of the matrix), we analyzed the results of the children. If the children were also unschooled (first column of the matrix), we can conclude that there was *no intergenerational mobility in education*, because parents and children reached the same level of schooling. The second line of the matrix shows that there is no intergenerational mobility in education at points in which the level of schooling achieved by the children is equal to that achieved by the parents (**blue area**, main diagonal).

If, in this example, the children reached any level above that of their parents, we can conclude that there was *absolute upward intergenerational mobility in education*, that is, the level of schooling reached by the children was higher than the level of schooling reached by their parents. Considering unschooled parents (first line of the matrix), this result applies to children with incomplete Elementary or Junior High School levels, complete Elementary and Junior High School levels, incomplete High School level, complete High School level, incomplete Undergraduate studies, holding a bachelor's degree or higher (**green area**).

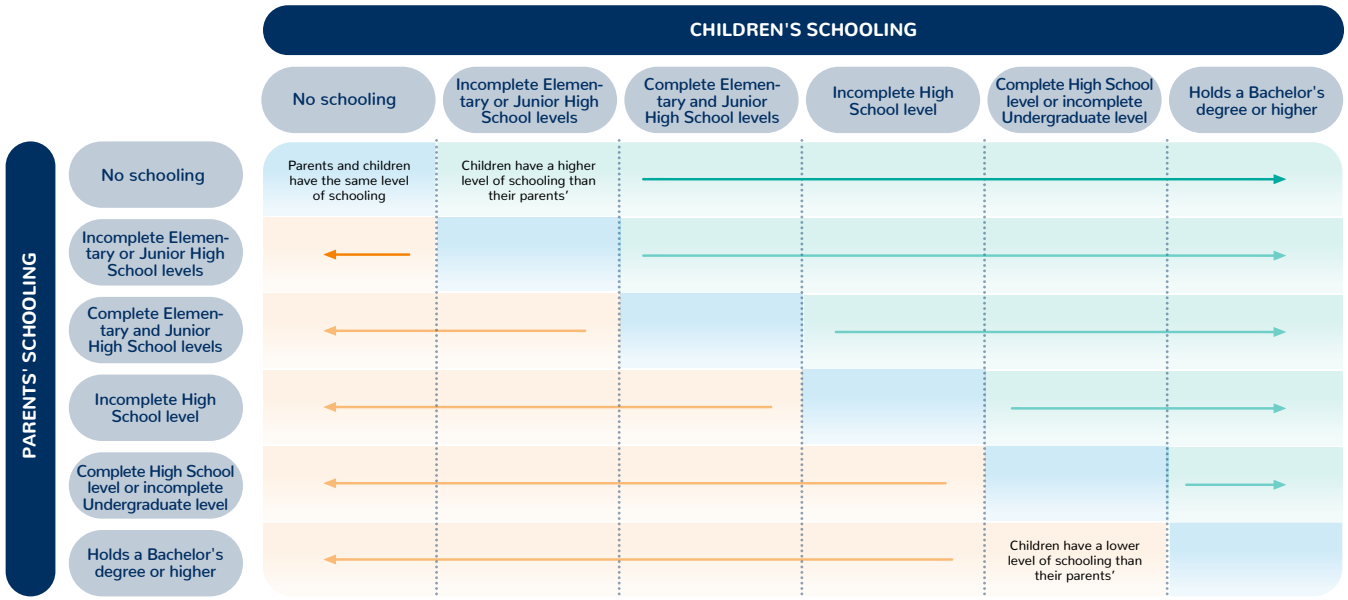
[9] For studies that analyze the relationship between the level of schooling of parents and children based on pairs (parents and children) who reside in the same household, see for example, Barros and Lam (1993) and Barros et al. (2001). For studies that analyze pairs of parents and adult children, see for example, Pastore and Silva (1999), Ferreira and Veloso (2003) and Mahlmeister et al. (2019).

Level of schooling

Levels of schooling refer to the highest degree that parents and children have attended or attend (in the case of children), throughout their lives. These levels can be separated in different ways: in modalities (Elementary and Junior High School levels, High School level, Undergraduate or Graduate degrees), by the type of conclusion (complete, incomplete), by year and grade (1st, 2nd, 3rd, etc.). In order to reconcile previous and recent educational systems, supported by IBGE (2017), in this study, the modalities and status of completion were considered, presenting the following levels: no schooling; incomplete Elementary or Junior High School levels; complete Elementary and Junior High School levels; incomplete High School level; complete High School level or incomplete Undergraduate level; and holds a bachelor's degree or higher, which also considers master's and/or doctor's degrees.

DIAGRAM 1.1

Construction of an educational transition matrix of parents and children



Source
Own elaboration. IMDS

Understanding intergenerational mobility in education
What was the educational level reached by your father and by your mother? Is your educational level the same (without intergenerational mobility), higher (there was upward intergenerational mobility in education) or lower (there was downward intergenerational mobility in education) in relation to that of your parents?

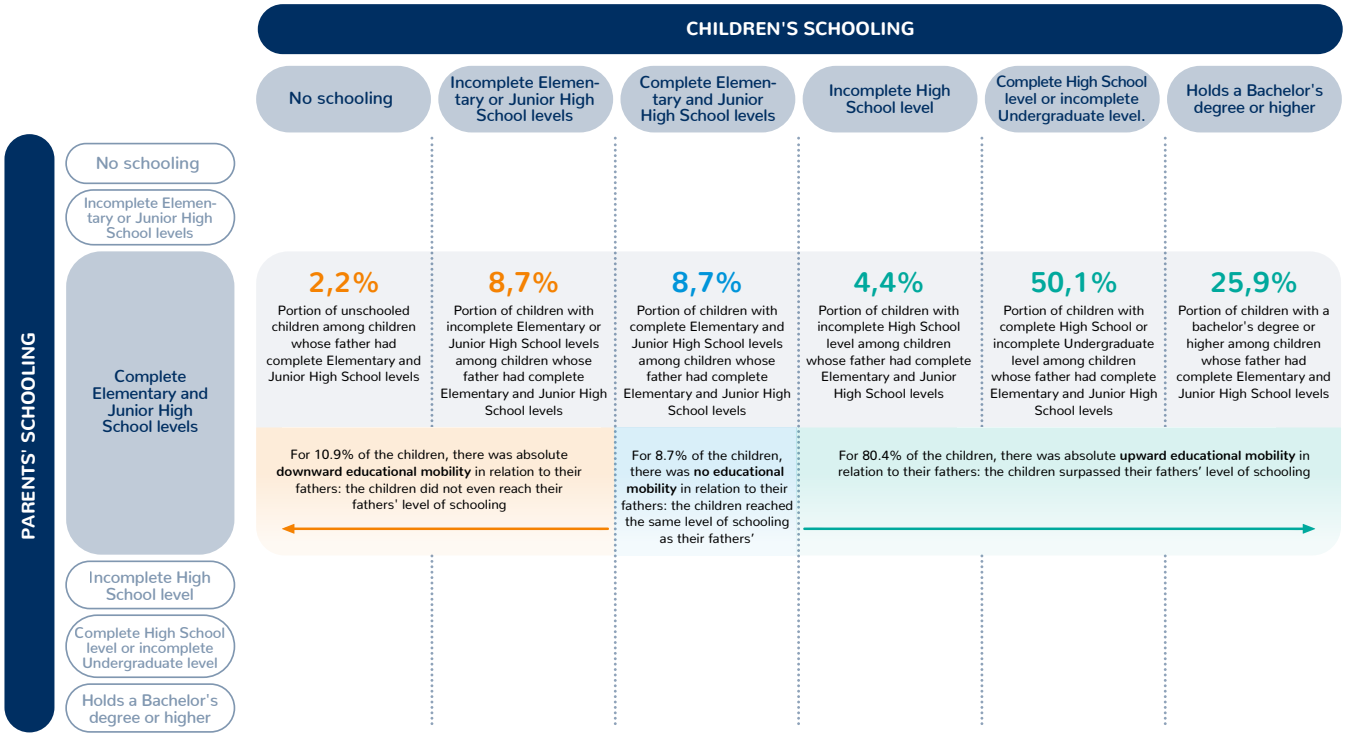
Finally, if the children reached a level of schooling below that of their parents, there was still mobility. However, it was *absolute downward intergenerational mobility in education*. Considering parents holding a bachelor's degree or higher (sixth row of the matrix), this result applies to children with no schooling, incomplete Elementary or Junior High School levels, complete Elementary and Junior High School levels, incomplete High School level, complete High School level or incomplete Undergraduate level (**orange area**)

When the entire reference population is analyzed, the matrix shows the percentage distribution of children whose parents have a certain level of schooling. Diagram 1.2 exemplifies the case of fathers who completed Elementary and Junior High School levels, based on data available on the IMDS portal.

Children with no schooling and children with incomplete Elementary or Junior High School levels underwent absolute downward intergenerational mobility in education (10.9%), whereas children with incomplete High

DIAGRAM 1.2

Analysis of the results of the transition matrix



School level or any level above, underwent absolute upward intergenerational mobility (80.4%). Children who remained at the same educational level as their fathers' – the complete Elementary and Junior High School levels – did not undergo intergenerational mobility in education. The sum of this line is 100% (the total number of children whose fathers had completed the Elementary and Junior High School levels).

This matrix structure is important because it allows an analysis, within a single frame, of the movement observed between parents and children. Studies on intergenerational mobility interpret each of the elements of this matrix as the *conditional probability that the child will move from their parent's level of education to another level*, whether it be higher or lower, or remain at the same level. Therefore, it exposes the probability of

Source
Own elaboration. IMDS.

Level of schooling of father and mother
Level of schooling of father and mother. Intergenerational mobility and, consequently, the transition matrix, can be analyzed based on either the level of schooling of the father (or of the man responsible for their upbringing), or the level of schooling of the mother (or woman responsible for their upbringing). It can also be based on the average level of schooling of the parents' or, still, the highest level of schooling between the parents. In this study, the level of schooling analyzed will be that of the father, seeking greater compatibility with the literature on intergenerational mobility, which generally analyzes mobility relationships between father and son or daughter. In the system of indicators produced by IMDS[10], matrices built based on the schooling of the father, the mother and the maximum level of schooling observed between father and mother are available for accessing. Exploring these matrices, it is possible to note that there is no relevant difference between the patterns described herein in relation to other possible modes of comparison.

[10] Imds | Institute for Mobility and Social Development: imdsbrasil.org/en

TABLE 1.1

Intergenerational educational transition matrix: children in relation to their fathers: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING						
	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total
No schooling (less than primary education)	17,5%	42,1%	9,9%	4,6%	21,2%	4,7%	100%
Incomplete Elementary or Junior High School levels	3,5%	25,3%	11,2%	5,4%	39,7%	15,0%	100%
Complete Elementary and Junior High School levels	2,2%	8,7%	8,7%	4,4%	50,1%	25,9%	100%
Incomplete High School level	1,5%	6,4%	2,8%	4,1%	55,7%	29,5%	100%
Complete High School level or incomplete Undergraduate level	1,0%	3,7%	3,4%	2,7%	47,1%	42,2%	100%
Holds a bachelor's degree or higher	0,5%	1,7%	1,3%	1,5%	25,3%	69,7%	100%
Total	7,8%	26,3%	9,2%	4,6%	34,2%	18,0%	100%

Source
IMDS based on PNAD 2014 microdata.

transition between levels of schooling of one generation (the child's) in relation to that of another generation (the parent's).

This section presents this exercise from the indicators produced by the Institute for Mobility and Social Development – IMDS, based on microdata from the National Household Sample Survey – PNAD 1996 and 2014 and its supplements on socio-occupational mobility, made available by IBGE. In these supplements, IBGE investigated socioeconomic information of the population and of their parents.

Table 1.1 presents the transition matrix with information on the level of schooling of the children given the level of schooling of the

fathers. In 2014, the probability that a person between 25 and 65 years of age, with an unschooled father, would attain a bachelor's degree or higher was 4.7%. A person of the same age group, whose father held a bachelor's degree or higher, had a 69.7% likelihood of also graduating from university.

Looking at the **orange area** highlighted in Table 1.1, we note that more than half of the children of unschooled fathers (59.6%) are likely to remain unschooled (17.5%) or achieve, at most, incomplete Elementary or Junior High School levels (42.1%), which depicts a low schooling "trap" scenario: the highest chances are concentrated in low schooling when fathers have no schooling. And, although 21.2% managed to reach complete High School level or incomplete Undergraduate level, only 4.7% manage to obtain a bachelor's degree, the least favorable scenario in the matrix.

At the opposite extreme, in the **blue area** highlighted in Table 1.1, we note what will be called an *intergenerational privilege* [12], the probability that children whose fathers attained the highest level of schooling possible, will reach the same level of schooling as their fathers': 69.7 % of the children of fathers with bachelors' degrees or higher, were at least able to graduate from college.

Analyzing the most recent cohort of children - those born from 1980 to 1989 - it is possible to detect some progress among the younger generations. Those born in the 1980s were between 25 and 34 years of age in 2014 and this was the first cohort among all those analyzed where the "trap" of low schooling was below 50% (**orange area** in Table 1.2):

Low schooling "trap"

Low schooling is presented in MEC studies and research as a synonym for incomplete Elementary or Junior High School levels and, also, for specific analyses of the sub-universe of the incomplete initial years of Elementary school (0 to 3 years of study, also known as functional illiteracy). Inspired by the OECD (2018) definition of sticky floor, which identifies greater difficulty in social ascension among people with disadvantaged family contexts (that is, a kind of adherence state), it is proposed, in this study, to consider that there exists a low schooling "trap" whenever the probability of children of unschooled fathers remaining unschooled or reaching only up to incomplete Elementary or Junior High School levels is 50% or more.[11]

Intergenerational privilege

Intergenerational privilege. In its publication Description of Global Database on Intergenerational Mobility (GDIM), the World Bank (2018) presents the various indicators of intergenerational mobility made available in its database. Among them is the indicator of intergenerational privilege, understood as the percentage of individuals whose fathers reached the top quartile of level of schooling, and who also reached the top quartile of level of schooling. Therefore, this concept has been adapted for this publication, in which intergenerational privilege[13] is attributed to the percentage of children of fathers who hold bachelors' degrees or higher and who themselves also hold bachelors' degrees or higher (the highest level of education in this publication).

[11] The term "trap" is not being used in the strict sense. Strictly speaking, this term is used in the literature when there is an absorbing state associated with a threshold level, that is, when conditional probabilities of the child's schooling add up to the unit, when associated with the father's schooling, is equal to or less than the threshold.

[12] See GDIM Description WB (2018).

[13] There are considerations about whether undergraduate and graduate degrees are to be considered a privilege or not; however, this is the literal translation of the indicator called by the World Bank Intergenerational Privilege, and so, for international comparability, we have opted to maintain the nomenclature.

TABLE 1.2

Intergenerational educational transition matrix of children born from 1980 to 1989 in relation to their fathers: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING						
	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total
No schooling (less than primary education)	6,2%	34,3%	11,1%	9,2%	35,3%	3,9%	100%
Incomplete Elementary or Junior High School levels	2,4%	14,2%	9,6%	7,8%	53,4%	12,7%	100%
Complete Elementary and Junior High School levels	1,0%	7,1%	6,9%	4,3%	57,3%	23,3%	100%
Incomplete High School level	1,8%	5,1%	3,8%	5,0%	57,8%	26,4%	100%
Complete High School level or incomplete Undergraduate level	0,7%	1,8%	3,0%	2,9%	51,8%	39,8%	100%
Holds a bachelor's degree or higher	0,2%	0,5%	0,6%	0,5%	29,4%	68,7%	100%
Total	2,7%	14,8%	7,8%	6,4%	47,8%	20,5%	100%

Source
IMDS based on PNAD 2014 microdata.

6.2% of children of unschooled fathers remained unschooled and 34.3% reached incomplete Elementary or Junior High School levels. For this cohort, the highest concentration of children reached complete High School level or incomplete undergraduate studies (35.3%).

To a large degree, younger cohorts tend to have greater upward intergenerational mobility in education than older cohorts. Considering the fathers who reached at least the incomplete Elementary or Junior High School levels, the greater educational chances of their children are

associated with the completion of the High School level, a progression seen over practically the entire matrix.

Although most children managed to complete the High School level in the younger cohort, this level still remains a *barrier* for further studies for all analyzed cohorts (Tables 1.1 and 1.2). The highest probability of obtaining a bachelor's degree is for children whose fathers also hold a bachelor's degree: 69.7% considering all cohorts, and 68.7% considering the youngest cohort (born from 1980 to 1989).

HIGH SCHOOL BARRIER

We say that there is a barrier when upward intergenerational mobility between fathers and children exists, but there is a point (a limit) where most children are concentrated.

In the case of education, each generation of children presented an educational rise in relation to their fathers in a progressive way: more recent cohorts of children appear to get more and more schooling, which is remarkable as seen by the increase in the probability of reaching complete High School or incomplete undergraduate studies levels (Table 1.3). However, this movement observed among the generations in the matrix is not expressed in consistent increases in the probability of reaching undergraduate or graduate studies. It is understood that a percentage of these individuals may have acquired technical training after High School, which is not captured by the matrix. However, what is relevant for this analysis is that they do not complete undergraduate studies.

Table 1.3 shows how this movement towards completing the High School level has solidified over the generations of children, regardless of the father's schooling (see the first columns of each cohort, along each row). It also shows how attaining a bachelor's degree remained relatively stable in terms of the probability of completion (see the second column of each cohort along each row), despite increasing as fathers received more schooling (see each line along the second columns).

In addition, it is evident that the greatest chances of overcoming the High School barrier are among children whose fathers have at least gotten a bachelor's degree in all the analyzed generations.

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TABLE 1.3

Educational transition of children in different cohorts in relation to their fathers: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING IN EACH COHORT							
	1949–1959		1960–1969		1970–1979		1980–1989	
	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher
No schooling (less than primary education)	**8,3%**	4,0%	19,6%	5,1%	24,8	5,5%	**35,3%**	3,9%
Incomplete Elementary or Junior High School levels	**24,0%**	17,0%	34,0%	16,8%	40,3%	14,6%	**53,4%**	12,7%
Complete Elementary and Junior High School levels	**40,8%**	36,1%	45,0%	24,7%	45,5%	26,8%	**57,3%**	23,3%
Incomplete High School level	**36,4%**	33,3%	46,4%	37,0%	57,6%	34,0%	**57,8%**	26,4%
Complete High School level or incomplete Undergraduate level	**35,6%**	49,4%	36,4%	48,8%	48,4%	40,1%	**51,8%**	39,8%
Holds a bachelor's degree or higher	22,2%	**68,3%**	21,8%	**68,2%**	29,4%	**72,8%**	29,4%	**68,7%**

Source
IMDS based on PNAD 2014 microdata.

TABLE 1.4

Distribution of children of each cohort by level of schooling: Brazil, 2014

AGE IN 2014	COHORTS	CHILDREN'S LEVEL OF SCHOOLING					
		No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher
55 a 65 year-olds	1949–1959	15,5%	**40,5%**	8,6%	2,2%	18,0%	15,3%
45 a 54 year-olds	1960–1969	10,1%	**21,0%**	10,3%	3,6%	28,5%	16,5%
35 a 44 year-olds	1970–1979	6,0%	25,1%	10,2%	5,0%	**35,5%**	18,4%
25 a 34 -year-olds	1980–1989	2,7%	14,8%	7,8%	6,4%	**47,8%**	20,5%

Source
IMDS based on PNAD 2014 microdata.

The relevant aspect of the analysis of the educational results of fathers and children by cohort is the possibility of verifying the changes in the distribution of adults at each level of schooling, among individuals born in different decades.

People born in different decades lived in different socioeconomic and, often educational, structures (as shown in Table 1.4). Despite the association, there is no causal relationship between the level of schooling of fathers and the educational outcome of the children presented herein, as other factors also influence the observed differences.

Analyzing the distribution of the children of each cohort by educational levels, it is possible to note that there was an educational leap between the cohorts born from 1970 to 1979 and those from 1980 to 1989 when compared to the two previous cohorts (Table 1.4).

The phases of greatest human capital accumulation are concentrated in childhood, adolescence, and early adulthood, so that people aged 25 or over are old enough to have completed all basic schooling and acquired a university degree, if the individual continues along the ongoing basis between educational modalities. The younger cohorts expe-

rienced important changes in the educational structure throughout their school life, since the first National Education Plan of 1962, through the universalization of basic education (from the Federal Constitution of 1980), the New Law of Guidelines and Educational Bases (*Nova Lei de Diretrizes e Bases da Educação – LDB*, Law No. 9,394 / 1996), among others. However, there are several other factors that may be related to the expansion of access to education, such as urbanization, the actual growth of the father's income, income transfer programs and, among others, the universalization of the offer of places at the Elementary and Junior High School levels.

On the other hand, we cannot attribute only to the cohort effect, differences in educational mobility observed between generations in a single year (2014). Human capital can be acquired late in life (see Box "Late university enrollment").

LATE UNIVERSITY ENROLLMENT

One way to observe the increase in schooling throughout a life cycle is from information available on the Intragenerational Mobility Panel: an analysis of life cycles (1996 and 2014). This panel contains information for cohorts born between 1950 and 1959 and those born between 1960 and 1969, based on PNADs 1996 and 2014, made compatible for analysis.

In this case, the comparison is an analysis over the life cycle of what happened at two distinct moments of a cohort - the birth year cohort presumed from the age of respondents on the reference day of the surveys. Therefore, it is necessary to note that this is not a comparison of two moments in the life of the same individuals, but of groups that represent specific cohorts at two moments in time.

For those born between 1950 and 1959, in 1996, the probability of at least completing High School was 25.1%. In 2014, this same probability reached 33.6%. In other words, the analysis of this same generation, in two moments in time, indicates late schooling, considering that this cohort represents people aged 37 to 46 in 1996 and aged 55 to 64 in 2014 (Table 1.5).

Of the generation born between 1960 and 1969, in 1996 - people aged 27 to 36 -, about 20% had completed the High School level or had incomplete undergraduate level, and 7.5% had obtained a bachelor's or higher degree (Table 1.6). In 2014, these percentages were, respectively, 28.3% and 16.4% for people 45 to 54 years of age. Although it is not the same people being followed (this is not a longitudinal panel), the substantial increase in the proportion of schooled individuals indicates late university enrollment in that cohort of the population.

That is, there is an increase in schooling for both cohorts in the comparison between 1996 and 2014, with groups representing the same cohort changing to a higher educational level over time. This increase in schooling is observed in all paternal educational categories.

TABLE 1.5

Distribution of children in the 1950 to 1959 cohort by level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING											
	PNAD 1996						PNAD 2014					
	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels or incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels or incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total
No schooling (less than primary education)	28,3%	56,8%	7,7%	5,7%	1,4%	100%	27,0%	50,6%	10,0%	8,2%	4,2%	100%
Incomplete Elementary or Junior High School levels	5,8%	48,5%	15,7%	20,7%	9,3%	100%	4,4%	39,7%	14,1%	24,3%	17,4%	100%
Complete Elementary and Junior High School or incomplete High School level	1,0%	14,6%	15,0%	37,4%	32,0%	100%	4,5%	12,2%	6,1%	40,2%	37,1%	100%
Complete High School level or incomplete Undergraduate level	0,3%	9,2%	10,0%	38,2%	42,3%	100%	0,9%	9,4%	3,2%	38,6%	47,9%	100%
Holds a bachelor's degree or higher	0,5%	3,8%	4,7%	26,6%	64,4%	100%	0,8%	2,9%	5,9%	20,9%	69,5%	100%
Total	14,4%	48,4%	12,0%	**15,9%**	**9,2%**	100%	14,7%	40,7%	11,0%	**18,1%**	**15,5%**	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 1.6

Distribution of children in the 1960 to 1969 cohort by level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING											
	PNAD 1996						PNAD 2014					
	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels or incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels or ncomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total
No schooling (less than primary education)	20,9%	59,3%	11,0%	7,9%	1,0%	100%	19,1%	42,9%	13,4%	19,6%	5,1%	100%
Incomplete Elementary or Junior High School levels	4,2%	45,1%	21,1%	23,4%	6,2%	100%	3,6%	28,9%	16,8%	33,8%	16,8%	100%
Complete Elementary and Junior High School or incomplete High School level	1,3%	15,4%	19,4%	42,2%	21,7%	100%	1,7%	13,7%	13,7%	45,1%	25,9%	100%
Complete High School level or incomplete Undergraduate level	0,5%	7,2%	11,8%	47,3%	33,3%	100%	0,6%	5,0%	7,6%	37,2%	49,6%	100%
Holds a bachelor's degree or higher	0,4%	3,1%	5,8%	31,4%	59,4%	100%	0,2%	3,4%	4,6%	21,3%	70,6%	100%
Total	9,7%	46,2%	16,7%	19,9%	7,5%	100%	9,6%	31,5%	14,2%	28,3%	16,4%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

In addition to the birth year cohorts, it is possible to select groups by sex, skin color or race, region of the country, and area of residence. For the analysis of disaggregated data, there is one point to be cautious of: PNAD is a sample survey, therefore, it is necessary to be careful with the sample size at each disaggregation before drawing firm conclusions.

The possibilities of analysis based on the *sex of the children* show that the patterns observed previously are similar for men and women. For both sexes, there is the occurrence of the low schooling "trap," high school barrier, and intergenerational privilege. However, it is possible to highlight some differences in the results:

- Daughters of fathers with complete High School level or incomplete Undergraduate level are more likely to obtain bachelors' degrees or higher (49.1%) than to stop at the complete High School level or incomplete Undergraduate level (41.3%), breaking the high school barrier at this point, which is not the case for men;

- Sons of fathers with complete High School level or incomplete Undergraduate level have at least a 34.5% probability of obtaining a bachelor's degree, while the probability of remaining in the complete High School level or incomplete Undergraduate level is 53.4%;

- The low schooling "trap" manifests itself more severely for men than for women: for children of fathers with no schooling, the chances of reaching, at most, incomplete Elementary or Junior High School levels, are 64.0% for men, and 55.8% for women;

- Women have a 55.5% probability of reaching, at least, the complete High School level, while for men, this same probability is 48,5%;

- The intergenerational privilege is greater among women (72.3%) than among men (67.1%).

Analysis by groups of *skin color or race* allows us to visualize the profile of educational mobility in Brazil for Whites and Blacks[14], indicating that both the low schooling "trap" and the high school barrier, despite manifesting themselves in both groups, are more accentuated for the Black portion of the population. While for Whites the low schooling "trap" is 54.8%, for the Black population it is 62.3% (Table 1.8).

In addition to being more restricted for Black people, the high school barrier was only overcome by this portion of the population by children of fathers holding bachelors' degrees, while for Whites, it is also overcome by children of fathers with complete High School level or incomplete undergraduate studies. This indicates that the father's higher level of schooling has different relationships when we consider the breakdown by skin color or race. In addition, intergenerational

Sample size in this study
For this report, disaggregated indicators were excluded from the analysis in which the PNAD sample size is less than 100 for each subgroup analyzed.

[14] Considering people who declared themselves to be Black or Mixed race.

TABLE 1.7

Educational transition matrix of children according to sex in relation to their fathers: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING													
	MEN							WOMEN						
	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total
No schooling (less than primary education)	19,4%	44,6%	10,0%	4,3%	18,3%	63,4%	100%	15,8%	40,0%	9,8%	4,8%	23,8%	5,8%	100%
Incomplete Elementary or Junior High School levels	3,6%	28,9%	12,6%	5,5%	38,3%	11,0%	100%	3,3%	21,9%	9,8%	5,3%	41,1%	18,6%	100%
Complete Elementary and Junior High School levels	2,5%	8,9%	11,8%	4,3%	50,6%	21,9%	100%	2,0%	8,5%	5,7%	4,5%	49,5%	29,9%	100%
Incomplete High School level	2,7%	4,8%	3,0%	5,4%	59,7%	24,4%	100%	-	8,3%	2,6%	2,7%	51,0%	35,4%	100%
Complete High School level or incomplete Undergraduate level	1,0%	4,1%	4,0%	2,9%	53,4%	34,5%	100%	1,0%	3,3%	2,8%	2,4%	41,3%	49,1%	100%
Holds a bachelor's degree or higher	0,3%	1,6%	0,3%	1,8%	28,9%	67,1%	100%	0,7%	1,8%	2,2%	1,2%	21,7%	72,3%	100%
Total	8,4%	28,5%	10,1%	4,6%	33,6%	14,9%	100%	7,2%	24,3%	8,4%	4,6%	34,7%	20,8%	100%

Source
IMDS based on PNAD 2014 microdata.

privilege is lower for Blacks (58.8%) than for Whites (71.7%)

Combining the analysis between *sex and skin color or race* allows the perception of other profiles of educational mobility. In dissonance with the result of women in Brazil, Black women, whose fathers have complete High School level or incomplete undergraduate level, for the most part, do not break through the High School barrier: 53.1% of these women stop at the barrier, while 32.9% attain,

TABLE 1.8

Educational transition matrix of children according to skin color or race in relation to their fathers: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	CHILDREN'S LEVEL OF SCHOOLING													
	WHITE							BLACK						
	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total	No schooling (less than primary education)	Incomplete Elementary or Junior High School levels	Complete Elementary and Junior High School levels	Incomplete High School level	Complete High School level or incomplete Undergraduate level	Holds a bachelor's degree or higher	Total
No schooling (less than primary education)	11,7%	43,1%	10,9%	4,5%	23,6%	6,2%	100%	20,6%	41,7%	9,4%	4,7%	19,9%	3,7%	100%
Incomplete Elementary or Junior High School levels	2,8%	23,6%	11,2%	4,8%	39,6%	17,9%	100%	4,3%	27,4%	11,0%	6,1%	40,0%	11,2%	100%
Complete Elementary and Junior High School levels	1,5%	6,9%	6,0%	3,8%	50,2%	31,6%	100%	3,2%	11,3%	12,1%	5,3%	50,3%	17,8%	100%
Incomplete High School level	-	7,4%	2,5%	2,4%	53,2%	34,5%	100%	3,1%	5,4%	3,1%	5,9%	58,3%	24,1%	100%
Complete High School level or incomplete Undergraduate level	1,1%	1,9%	2,5%	1,7%	43,2%	49,7%	100%	0,8%	6,8%	4,9%	4,3%	54,8%	28,3%	100%
Holds a bachelor's degree or higher	0,4%	1,2%	0,7%	1,3%	24,8%	71,7%	100%	0,9%	4,0%	3,9%	2,7%	29,8%	58,8%	100%
Total	4,4%	23,3%	8,7%	4,0%	35,9%	24,7%	100%	11,2%	30,6%	9,7%	5,2%	32,7%	10,6%	100%

at the very least, a bachelor's degree. For White women, the result is the opposite: 35.7% stop at the barrier and 57.3% attain a bachelor's degree or higher. While the intergenerational privilege for White women is 75.0% and the low schooling "trap" is 52.2%, for Black women the results are, respectively, 57.5% and 57.9%. In other words, there is an evident difference between the chances of Black and White women moving upwards in the intergenerational mobility matrix, with the barrier for Black women being greater both at the top and at the bottom of the distribution.

Source
IMDS based on PNAD 2014 microdata.

For men, the analysis based on skin color or race also shows relevant differences related to the possibilities of White and Black individuals ascending educationally in Brazil. The intergenerational privilege of White men is 68.1%, compared to 59.8% presented by Black men - a difference of 8.3 percentage points. Children of unschooled fathers who reach, at most, incomplete Elementary or Junior High School levels (low schooling "trap"), number, among Whites, 57.9% and, among Blacks, 67.2%. This is specifically so because 23.2% of Black men remain unschooled, almost double that of 12.1% for White men.

Although, in general, women are more educated than men in Brazil, this result is not evident when looking at the educational mobility behavior of Black women and men. For children of fathers with bachelor's degrees or higher, Black women are slightly less likely to reach the same level of schooling as their fathers', when compared to Black men (59.8%), with an intergenerational privilege of 57.5%. However, at the bottom of the distribution, we find other results: among Black people whose fathers have less schooling, women are more likely to achieve higher levels of schooling than men. Black daughters of unschooled fathers have a 22.7% probability of attaining a complete High School level or incomplete undergraduate level, and 4.6% of holding a bachelor's degree or higher. On the other hand, Black sons of unschooled fathers present a likelihood of, respectively, 16.8% and 2.6%. Still, the low schooling "trap" is 57.9% for Black women and 67.2% for Black men.

There are several possibilities for analyses based on the transition matrix for educational mobility in Brazil. In addition to the relationships established herein, it is possible to carry out analyses comprising aspects of regionality and area (rural, metropolitan urban, and non-metropolitan urban). However, one must take into account sample reductions from intersections and filters. With caution, the user will have access to a huge flow of information and evidence to support an analysis of educational mobility in Brazil in light of the data.

REGIONALITY

In the indicator panels provided by IMDS , it is possible to carry out analyses based on cuts of regions and areas. However, in addition to the issue of sample size already discussed, these comparisons require special care in territorial disaggregation (between Major Regions, between metropolitan and non-metropolitan urban areas, and rural areas) due to population migration.

All regional characteristics presented in the indicator panels refer to the location of the children at a certain point in time. However, the results do not capture the location of their fathers, or migrations that these children may have made throughout their lives.

Below is a practical example considering two groups of children, A and B, from the same region of origin. **Group A** is formed by **children with university degrees whose fathers also hold university degrees**. **Group B** consists of **children with complete High School level and incomplete undergraduate level, whose fathers hold university degrees**. That is, groups A and B have equal family backgrounds in terms of paternal level of schooling.

If, at a given time, the children of group A migrated to another region, their region of origin would have a smaller number of children with university degrees whose fathers also hold university degrees. If group B remained in its region of origin, this would mean that, proportionally, this region would have a greater concentration of children with a lower level of schooling than that of their parents.

From the sample of residents of this region – origin of groups A and B –, it would be possible to conclude that there was absolute downward educational mobility for children whose fathers hold university degrees, but this conclusion could be a reflection of a distortion caused by migration.

We say that, in this case, there is a sample selection bias. For the region that receives a higher schooled migrant, also due to the selection bias, we would reach the conclusion that there is greater intergenerational privilege, since only individuals with a university degree, children of fathers with a university degree, migrated, increasing the proportion of these cases in the region. This problem will be present whenever the migration pattern changes the original characteristics of the region's population with regard to the distribution of children's level of schooling in relation to the fathers' level of schooling, so caution is recommended when analyzing regionalized data.

Data show that the Southeast region has the highest chances of people reaching high levels of schooling, such as the complete High School level or incomplete undergraduate level (36.7%) and holding a bachelor's degree or higher (21.8%), regardless of the fathers' level of schooling. In the region, intergenerational privilege is 71.6%. The proportion of children of unschooled fathers caught in the low schooling "trap" is 54%. On the other hand, in the Northeast Region, intergenerational privilege is 62.3% and the low schooling "trap" concentrates 64.3% of children of unschooled fathers.

To explore various possibilities of combinations, access IMDS' indicator panels[16], taking care to analyze the information.

[16] Imds | Institute for Mobility and Social Development: imdsbrasil.org/eng

1.2. Intergenerational mobility in education in synthesis

Now that the transition matrices have been investigated - presenting the analysis of children's movements between levels of schooling given the fathers' level of education - the next step will be to verify indicators related to the profile of intergenerational mobility in education in Brazil and its evolution between 1996 and 2014.

In this sense, the focus will be on two elements: the conditional probabilities of upward and downward intergenerational mobility, in addition to the degree of influence of the fathers' level of schooling on the children's results.

For this, two panels will be explored: *Intergenerational Mobility – a comparison of the results of 1996 and 2014*; and *Intergenerational Mobility – generations*, based on their synthesis indicators of mobility, for which the 1996 and 2014 PNAD were made compatible.

The first indicator analyzed will be the indicator of *Absolute Upward Educational Mobility (weakly) (%)*, which shows the portion of children who attained a higher level of schooling than that of their fathers or remained at the same level of schooling as their fathers, in cases where this was a bachelor's or a higher university degree. Diagram 1.3 shows the construction of this indicator.

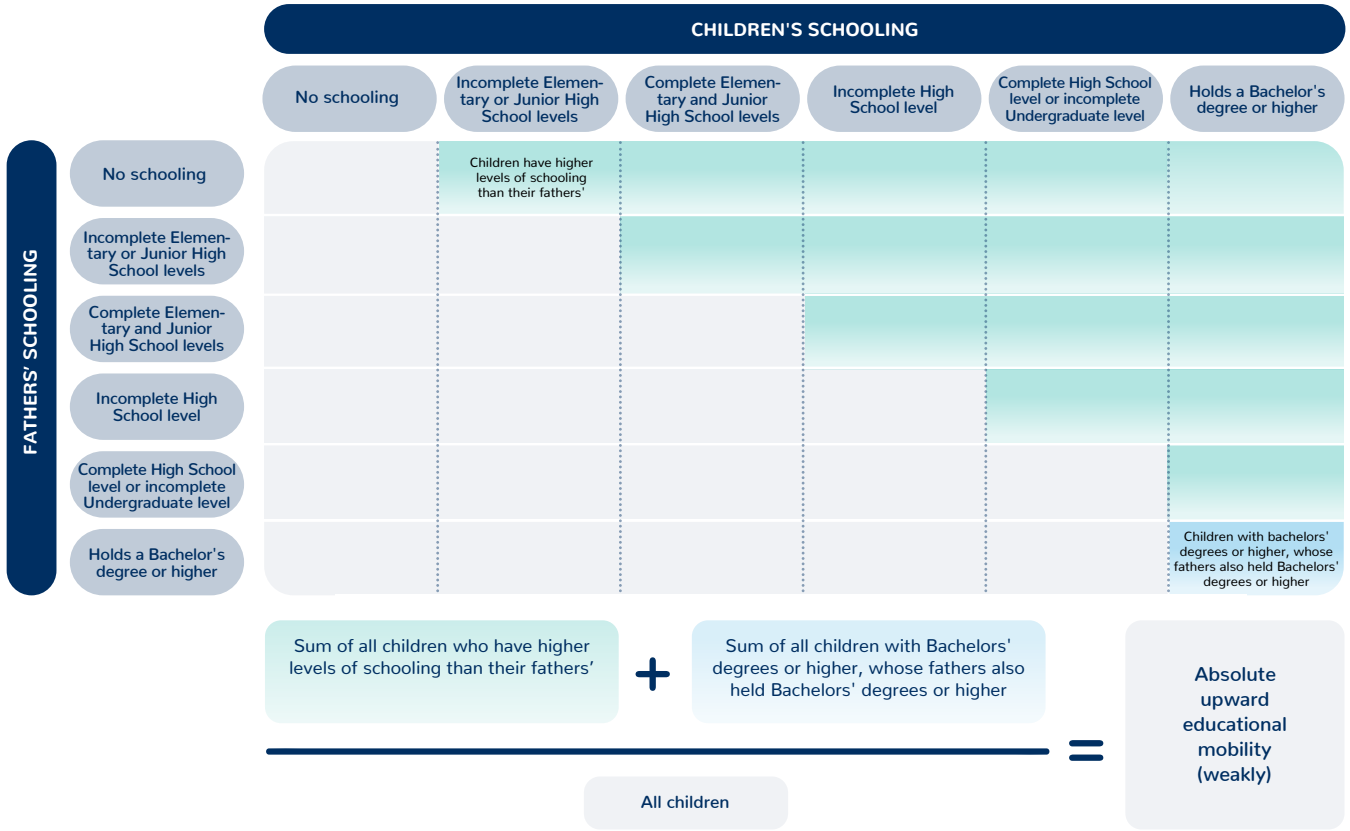
What characterizes this mobility indicator as weakly is the fact that it does not strictly consider movements of absolute upward mobility in the numerator. That is, it does not only consider children who surpassed their fathers' level of schooling (results above the main diagonal), but also children who showed immobility in relation to their fathers' level of schooling, provided that it had occurred at the highest educational level (lower cell of the main diagonal). This indicator is an adaptation of the *Absolute upward mobility (weakly)* indicator (World Bank, 2018).

Understanding the 1996 and 2014 PNAD

The results presented in section 1 were built based on the 2014 PNAD Socio-Occupational Mobility Supplement. However, this was not the only supplement applied by IBGE with this theme. In 1996, 18 years earlier, IBGE had also applied a similar questionnaire. In this study, IMDS' technical team matched the survey samples, making it possible to compare the indicators presented (see Appendix A). Thus, in this subsection, synthesis indicators of the children's intergenerational mobility in education will be analyzed in two moments of time.

DIAGRAM 1.3

Understanding the absolute upward educational mobility (weakly) indicator



Source
Own elaboration. IMDS.

WEAKLY MOBILITY MEASURES

The synthesis indicators bring with them the intention of, synthetically, presenting the profile of intergenerational mobility in education in Brazil. Among those presented by IMDS, there are two measures of intergenerational mobility in education characterized as weakly: absolute upward educational mobility (weakly), which shows the percentage of children who attained a level of schooling above that obtained by their fathers, or remained at the same level, if it were a bachelor's or a higher university degree, and absolute downward educational mobility (weakly), which shows the percentage of children who did not reach the level of schooling of their fathers', or remained the same, if that were at the no schooling level. Both are inspired by the Absolute upward mobility (weakly) indicator (World Bank, 2018).

The World Bank emphasizes that the use of the weakly measure of absolute upward mobility enables more optimistic results for developing

and developed countries, since, as countries evolve in the universalization of higher education, the absolute upward mobility indicator tends to fall – because children fail to outdo their fathers. Thus, to avoid a negative perception of the results of these countries, the World Bank proposes this alternative indicator, identified as weakly, which includes in the numerator children with the same level of schooling as their fathers' whenever both have a bachelor's or higher university degree.

With this in mind, this definition was appropriate for the synthesis indicator of absolute upward mobility (weakly) presented by IMDS for Brazil, linked to the understanding that to remain at the same educational level as their fathers', in cases where they had both obtained a bachelor's degree or higher (the highest level of this study), is a positive result that is similar to surpassing the fathers' level of schooling.

On the other hand, the same logic was adopted for the absolute downward mobility (weakly) synthesis indicator[17]. It is understood that remaining at the same educational level as their fathers', if both had no schooling, is a negative result that is similar to having reached lower levels of education than their fathers'.

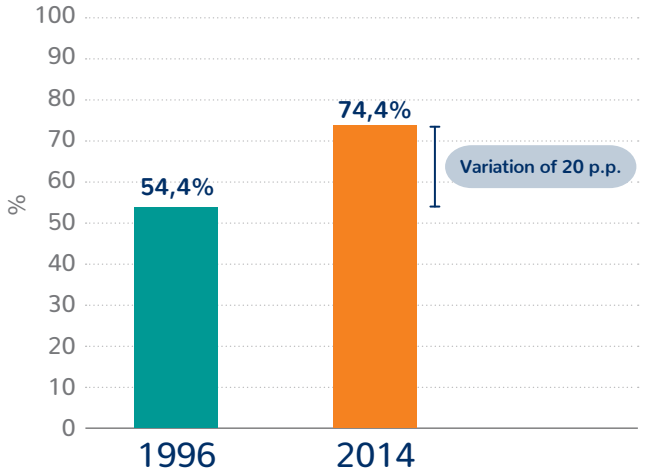
[17] The absolute downward educational mobility (weakly) indicator, despite not being explored in this publication, can be found among the indicators available on the IMDS portal.

In 1996, *absolute upward educational mobility (weakly)* was at 54.4%, that is, for every 100 people aged 25 to 64, 54 reached a higher level of schooling than their fathers', or the same, if the fathers had bachelors' degrees or higher. In 2014, there was an evolution: for every 100 people, 74 (74.4%) achieved absolute upward educational mobility (weakly).

This indicator can be analyzed in a disaggregated way, according to the characteristics of the children: sex, skin color or race, and age group. In relation to skin color or race (Graph 1.2), it is possible to note that both groups made progress between 1996 and 2014 and that the

GRAPH 1.1

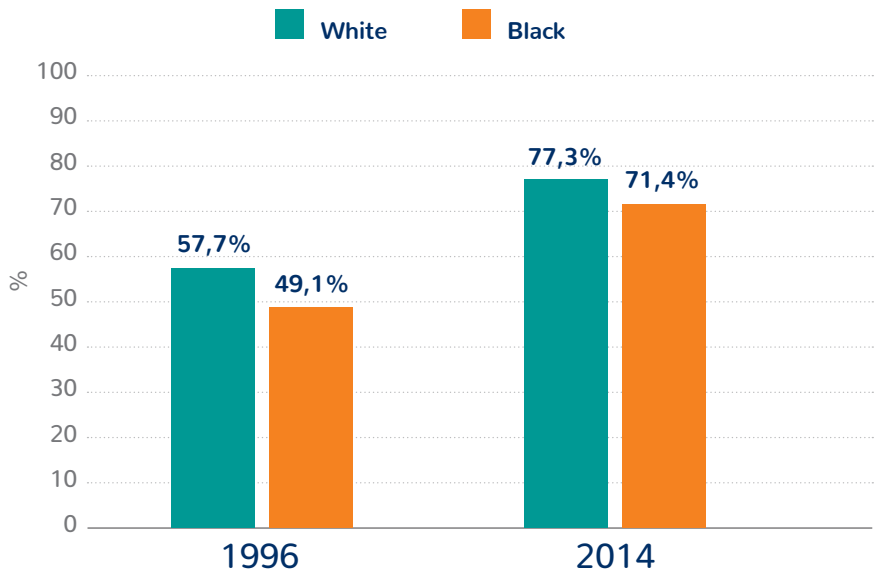
Evolution of absolute upward educational mobility (weakly): Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

GRAPH 1.2

Evolution of absolute upward educational mobility (weakly) of White people and Black people: Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

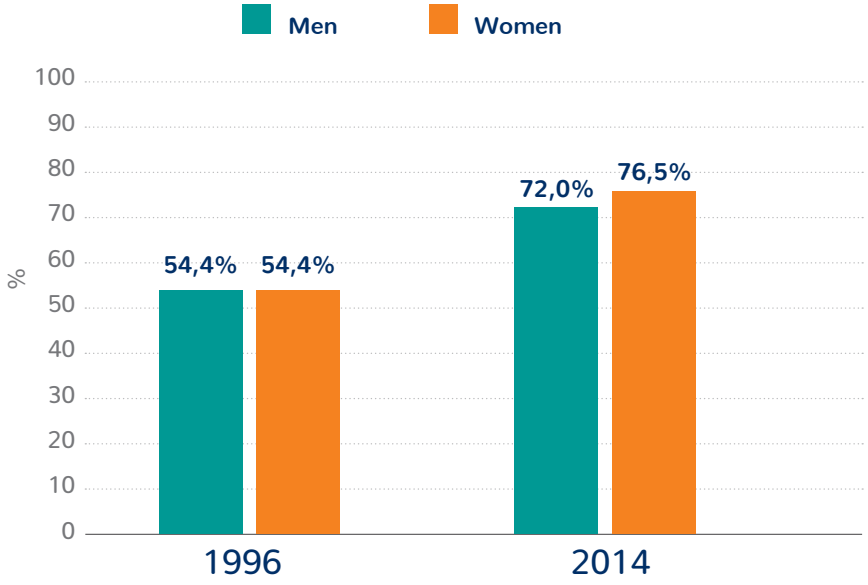
gap between Whites and Blacks diminished. But despite the positive result, absolute upward mobility (weakly) is still greater among Whites (77.3%) than among Blacks (71.4%).

Considering men and women, while in 1996 absolute upward educational mobility (weakly) is similar between these groups, in 2014 it is higher for women than for men, 76.5% compared to 72.0%. In this 18-year interval, the total fraction of women with higher levels of schooling than their fathers was four percentage points higher than that of men. Women enrolled at a faster rate than men, achieving a progress of 22.1 percentage points (pp), while men achieved a progress of 17.6 pp.

Analysis by age group (Graph 1.4) shows that the youngest group (the 25-to-34 year-olds attained 81.5% mobility in 2014) the greatest mobility, but it was the oldest group who made the

GRAPH 1.3

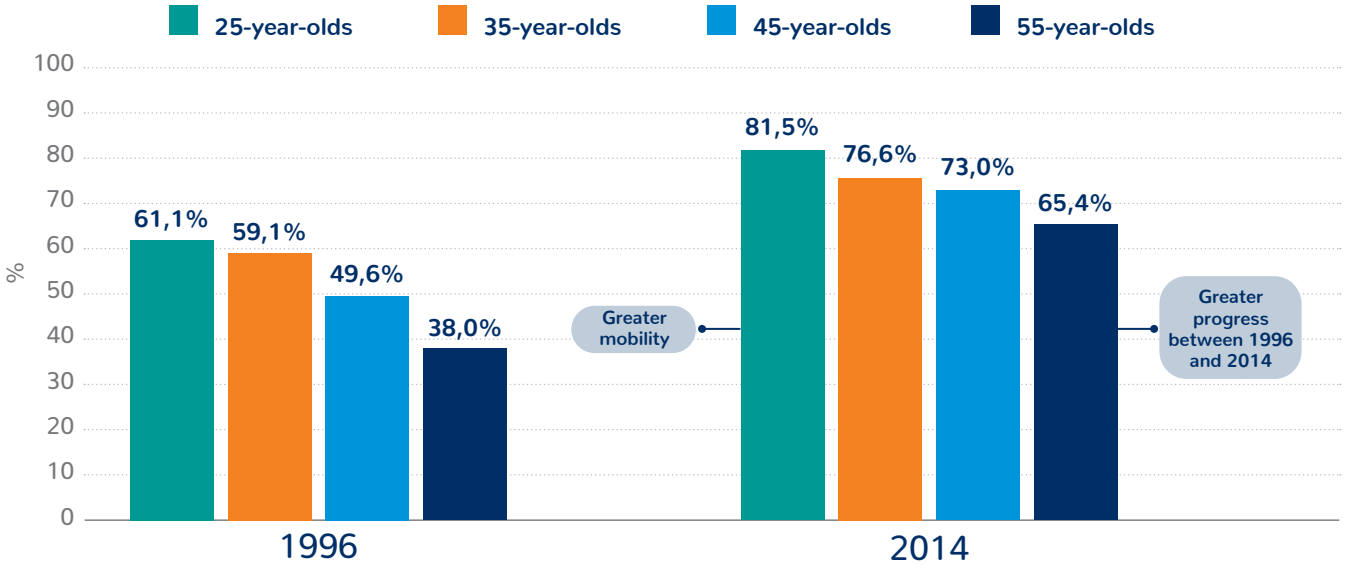
Evolution of absolute upward educational mobility (weakly) of men and women: Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

GRAPH 1.4

Evolution of absolute upward educational mobility (weakly) by age group: Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

greatest progress between the two periods analyzed (the 55-to-64-year-olds progressed 27.4 pp between 1996 and 2014).

This factor may be associated with the birth cohort of each age group analyzed: each group of children was born in different decades and, therefore, had exposure to different socioeconomic factors.

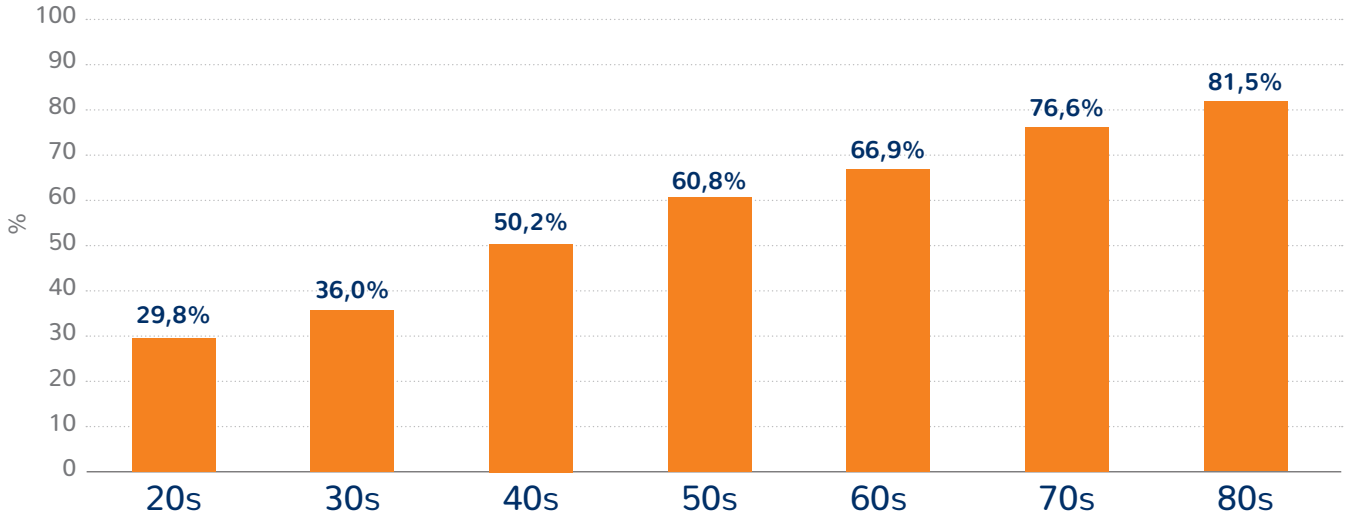
Graph 1.5 shows the evolution of absolute upward educational mobility (weakly) for generations born in different decades and indicates a positive course over time: absolute upward educational mobility (weakly) grows for younger generations, increasing from 29.8% among those born in the 1920s, to 81.5% among those born in the 1980s.

The second indicator to be analyzed is the *Absolute upward medium-distance educational mobility* (%)[18]. This indicator represents the percentage of children whose father was unschooled or had incomplete Elementary or Junior High School level of schooling, and who completed at least the High School level.

[18] This indicator is an adaptation of the indicator "absolute upward long-distance mobility" (IBGE, 2017).

GRAPH 1.5

Evolution of absolute upward educational mobility (weakly) by decade of birth: Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

In practical terms, the indicator measures the leap in educational mobility in relation to fathers with low levels of schooling.

Diagram 1.4 illustrates the group of children of interest: those who had the worst family background in terms of education but who achieved the best results.

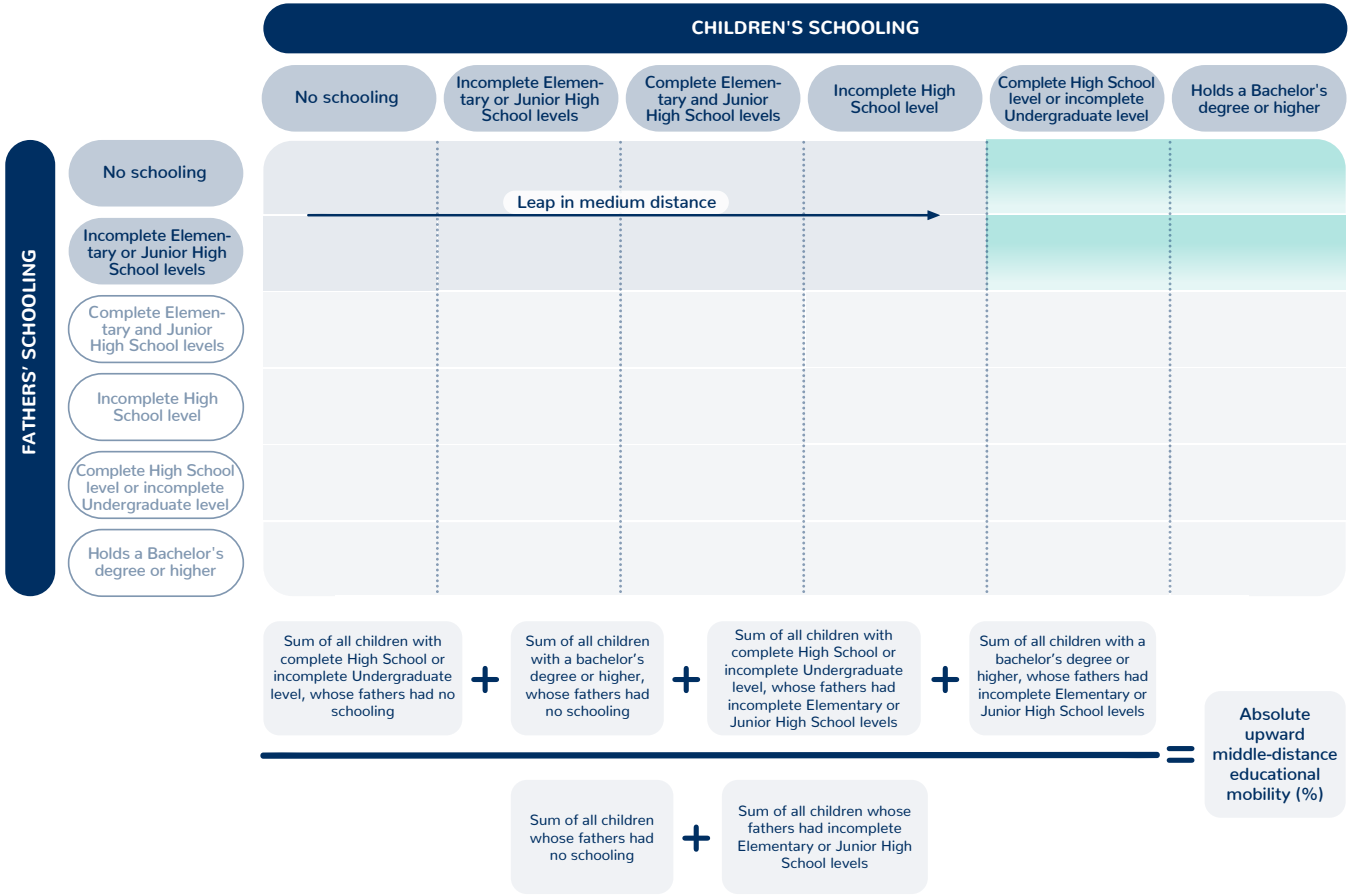
The leap in medium-distance educational mobility had very expressive results between 1996 and 2014. In the first year, 17.6% of children of fathers with, at most, incomplete Elementary or Junior High School level schooling, completed at least the High School level. In 2014, this percentage was 39.6%.

Exploring the indicator by decade of birth, one sees that the educational advance of children happened more sharply for the younger generations, which indicates an evolution of average leaps in ascending educational mobility over time. This mobility practically doubles between the generation of the 30s and the 40s and is more than 10 times greater for those born in the 80s (53.1%), than for those born in the 20s (5.0%).

The educational transition matrices (presented in subsection 1.1. of this study) revealed that individuals from more recent cohorts began to reach the High School level, to be held up at a kind of educational barrier. This indicator presents this in a synthetic way – there was an increase in the percentage of

DIAGRAM 1.4

Understanding the absolute upward medium-distance educational mobility indicator



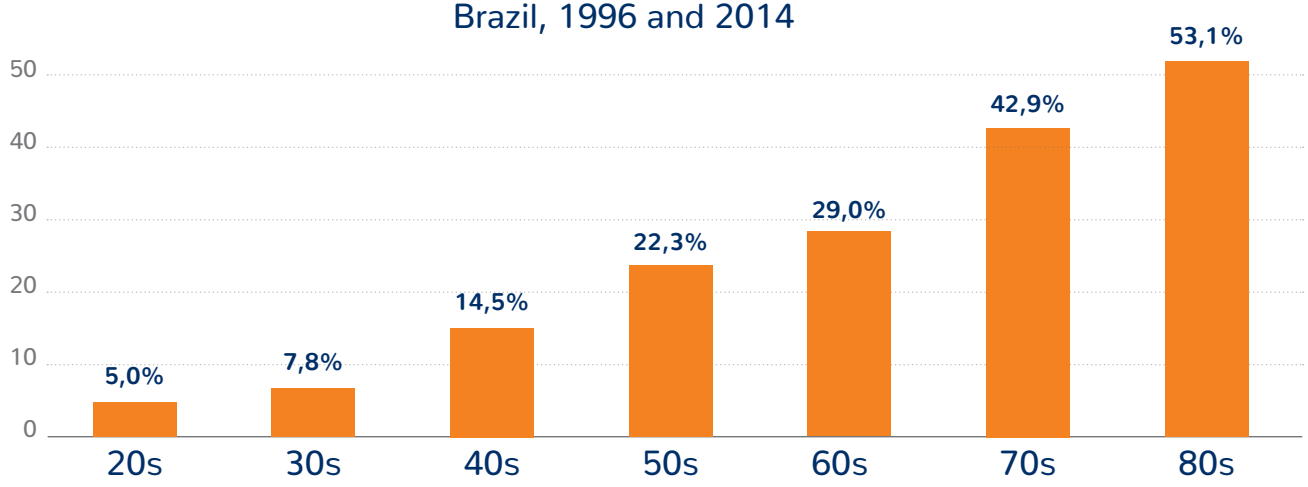
Source
Own elaboration. IMDS.

individuals who reached this level and whose parents had, at most, incomplete Elementary or Junior High School level of schooling.

However, looking at other cuttings, it is noted that this scope was more accentuated among women and among Whites. For women, the indicator went from 17.9% in 1996 to 43.0% in 2014; for men, the evolution was lower, from 17.4% to 35.7%, reinforcing the greater educational mobility of women in Brazil over the years captured by the survey.

GRAPH 1.6

Distribution of children in the 1960 to 1969 cohort by level of schooling: Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

In 2014, 46.2% of Whites took the medium-distance mobility leap in relation to their parents, while among Blacks the percentage was 33.7%. The difference between the indexes of Whites and Blacks remained stable in relation to 1996, when medium-distance mobility was 22.2% for Whites and 10.7% for Blacks. However, in addition to reinforcing the understanding of the unequal character between the mobility of White and Black people in Brazil, the data show that the leap between Black people was large enough to reduce the differences: the relative distance, which was double, became 37.1% higher.

Furthermore, it is observed that, in 2014, this mobility was greater in urban areas – metropolitan urban, 50.4%, and non-metropolitan urban, 41.81% – than in rural areas (17.5%). Despite the potential bias caused by migration, the numbers reinforce the idea of metropolises as territories of social mobility, particularly educational.

The positive variation of the indicator is markedly greater in the Southeast, Midwest and South - respectively, 25.2 pp, 22.8 pp and 22.5 pp. Although the variation in the North and Northeast regions are quite close, 17.5 and 17.3 pp, in the Northeast, the medium-distance educational leap is still below the result of the other regions. However, as highlighted in subsection 1.1, regional data require caution in the analysis due to migratory factors that are not captured by the indicators.

The third and last indicator analyzed in this subsection is the Intergenerational Persistence in Education indicator (years of schooling), a measure of educational mobility of the degree of

determination that the level of schooling of fathers has on the level of schooling of their children. The closer to 1, the greater the determination of the fathers' years of schooling over the children's years of schooling and, therefore, the lower the mobility. The closer to 0, the lower this determination and the greater the mobility, which means less influence of the family background on the children's mobility possibilities and, therefore, less inequality of opportunities among individuals.

This estimate is measured according to the model:

$$S_{fi} = \alpha + \beta S_{pi} + \varepsilon_i$$

where S_{fi} represents the schooling of the child of family i, S_{pi} represents the schooling of the father of family i and ε_i is a stochastic term with $E(\varepsilon_i) = 0$; $E(\varepsilon_i S_{pi}) = 0$ and $E(\varepsilon_i^2) = \sigma^2_{\varepsilon}$

The β coefficient measures the degree of intergenerational persistence in education. For example, if β is 0.5, then the child of a father whose level of schooling exceeds the average by two years (of the father's level of schooling) will have a level of schooling whose expected value will be one year above the average (of children's level of schooling). Measure $1 - \beta$ is called the degree of regression to the mean, or degree of intergenerational mobility in education.

The comparison of results of intergenerational persistence in education for the years 1996 and 2014 shows that there was an improvement in the structure of intergenerational mobility in education in Brazil, as, in 2014, the influence of the level of education of the fathers on the level of education of their children (0.58) was lower than in 1996 (0.76). This movement is, in part, explained by the expansion of secondary education for all children and by the already analyzed barrier at the High School level.

Analysis by generations shows a consistent downward movement in the intergenerational persistence in education after those born in the 1940s. For these, the intergenerational persistence is 0.77, the highest value observed, while for those born in the 1980s, it is 0. 44. Therefore, for younger generations, the degree of determination of the fathers' education on the level of education of their children is lower (Graph 1.7). This means that, less and less, the fathers' educational background determines their children's educational outcomes.

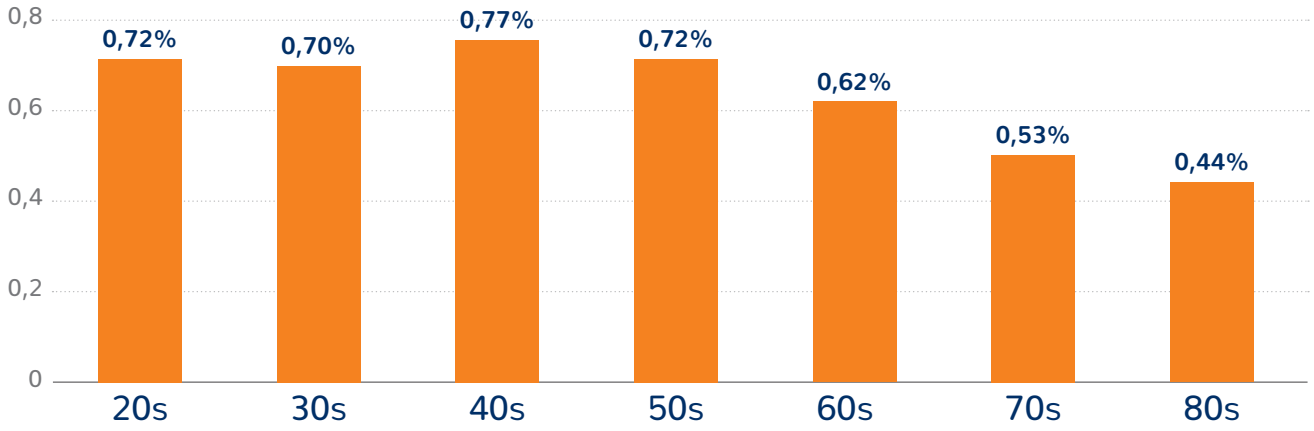
Analyzing by skin color or race shows that there was a greater reduction in the intergenerational persistence in education for Whites (-0.14) than for Blacks (-0.11), demonstrating a greater reduction, for White children, in the determination of the level of schooling of their fathers over their own level of schooling.

Among men and women, in 2014, the intergenerational persistence in education was greater for men (0.60) than for women (0.56), but the variation between the results of 1996 and 2014 for both sexes is equal, – 0.14. This means that, although the variation between years was similar, the determination of the fathers' level of schooling over their children's level is slightly greater among their male offspring.

In summary, the three indicators – absolute upward educational mobility (weakly), absolute upward medium-distance

GRAPH 1.7

Intergenerational persistence in education: Brazil, 1996 and 2014



Source
IMDS based on PNAD 1996 and 2014 microdata.

To return to the summary

educational mobility and intergenerational persistence in education (years of schooling) – show different angles of educational mobility: the two absolute mobility indicators pointed to an increase in mobility between 1996 and 2014, which resulted from rapid progress in schooling, especially for the younger generations. Cuttings of both indicators by demographic categories show that progress differed by gender and race/skin color but was substantial in all cases. The drop in the estimator of the intergenerational persistence in education indicator between 1996 and 2014 reveals an attenuation of the relationship between the relative position of children and fathers in their respective generations. In part, this is due to the appearance of High School completion as a point of greater frequency in marginal distributions of children's schooling, regardless of paternal education.

In the next sections, the relationships between other socioeconomic outcomes of children and fathers' level of schooling will be presented. Thus, it will be possible to explore whether there is influence, and consistency, in the relationship of fathers' level of schooling on labor market indicators, household and individual income, household structure, access to durable goods, services and technology, women's fertility and mortality of their descendants.

PART TWO

2 Position in the labor market, income earned by children and the fathers' level of schooling

CHAPTER HIGHLIGHTS:

- The chances of children reaching the stratum of more sophisticated occupations consistently increase as fathers become more educated. Children whose fathers have a college degree are 3.3 times more likely to be in the more sophisticated occupations stratum than the population average and almost 9 times more likely than children of unschooled fathers.

- When comparing the positions between the occupational strata in the first job and in the main job, two moments in the life of the same individual, there is an improvement in the situation in the labor market for children of fathers of all levels of schooling. However, while for most levels of schooling of fathers, the median of the first job jumps from one stratum to the next closest, for children of fathers with a bachelor's degree or higher, it jumps two strata, going from an intermediate stratum (C) to the most sophisticated stratum (A).

- Individuals whose fathers have the complete High School level or incomplete Undergraduate level are more likely on their first job to be employed with working papers – 45.4% –, more than three times higher than that of children of unschooled fathers - 12.4%. The percentages are higher for Whites, but the difference according to the levels of schooling of fathers is greater among Blacks – 42.5% compared to 10.0% – than among Whites – 47.1% compared to 16.7%.

- The probability that children of fathers with at least a university degree are employed without working papers is practically half that observed for children of fathers with no schooling – 11.4% and 20.3%, respectively.

- As the fathers' level of schooling increases, the probability that their children are unpaid workers or construction or production workers for their own use or consumption decreases by more than ten times among children of unschooled fathers (11.5%) and children of fathers with a university degree (1.0%).

- Only 12.0% of children of unschooled fathers are among the 20% of households with the highest per capita income in Brazil. For children of fathers with incomplete Elementary or Junior High School levels, this probability rises to 28.7%. Of those with fathers who have complete High School level or incom-

To return to the summary

plete Undergraduate level, more than half are in the richest fifth percentile (54.0%). And, if fathers have a bachelor's degree or higher, this probability rises to approximately 80.6%. Thus, a strong relationship is indicated between the fathers' level of schooling and their children's household income.

- More than a quarter (26.5%) of children of unschooled fathers are likely to be in poverty or extreme poverty, according to the lines defined by the World Bank for world poverty and poverty in upper middle-income countries. Among children of unschooled fathers, the probability of poverty or extreme poverty among White men is 17.6%, while for White women it is 20.1%. For this same group of unschooled fathers, Black men have a 29.3% probability of being below the poverty line and Black women have a 32.1% chance of being in the same situation.

- The chances that children of unschooled fathers are in the group of individuals with the lowest 20% income from work are 31.2%, while for children of fathers with a bachelor's degree or higher they are 3.7%. That is, there is a high probability that children of unschooled fathers are among the lowest incomes as adults, while these same chances for children of highly educated fathers are small.

The first section highlighted the association between the fathers' level of schooling and that of the children through transition matrices and synthesis indicators. This section expands the boundary between the relationship of the fathers' level of schooling and other aspects of their children's lives, such as labor and income.

Authors such as Lam and Schoeni (1993) and Bourguignon et al. (2007) showed that this correlation between the fathers' and their children's level of schooling not only exists, but also has direct effects on the income achieved by children in the labor market. In this sense, based on the stratification of children by paternal education level, the distribution of these children for each characteristic of interest will be analyzed. In practical terms, this is a reconfiguration of the educational transition matrix, now with children's labor market outcomes in the matrix columns.

To return to the summary

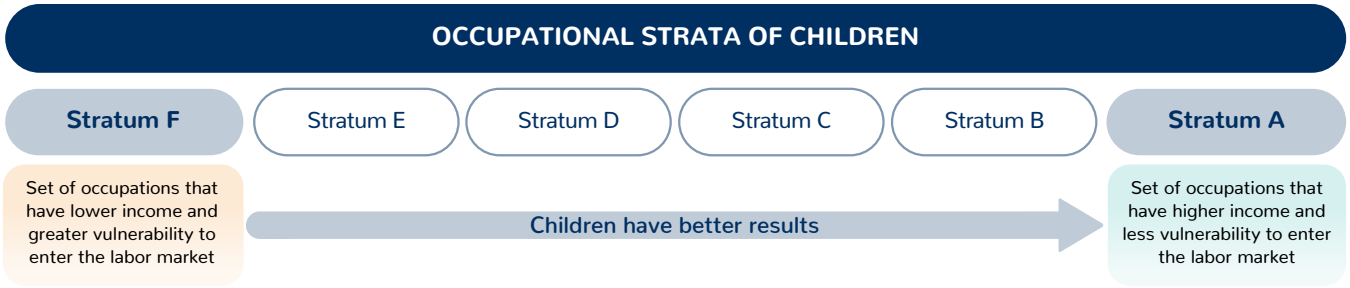
2.1. Relationship between the fathers' level of schooling and their children's position in the labor market

Some of the indicators chosen for this analysis are: occupational groups (probability of children being in more or less advantageous working conditions); occupation, unoccupied person, and inactivity (probability of children being occupied, unoccupied or inactive); allocation of time between study and work; and per capita household income ranges (probability of children being in households with higher or lower per capita income). For all cases, probabilities will be presented given the fathers' level of schooling.

Occupational groups, as defined by IBGE (2016)[19], express, on a scale from F to A, the working condition - with F being the stratum with lower average labor income and greater vulnerability of insertion in the market, and A the stratum that covers occupations with higher average labor income and less vulnerability of insertion in the market. Therefore, the greater the concentration of children on the right, the better the results (stratum A) (Diagram 2.1). And, as in the educational transition matrix, the conditional distribution of children according to occupation - and income - characteristics that will be presented herein, given the fathers' level of schooling, can also be interpreted as the conditional probability of the child's reaching the analyzed stratum.

DIAGRAM 2.1

Direction of the analysis of occupational strata indicators



[19] Occupational strata follow the methodology developed by IBGE. For details, access: https://www.ibge.gov.br/.

Source of diagram:
Own elaboration. IMDS.

In 2014, 19.8% of the children are in general directors or professionals in the sciences and arts (stratum A). However, the probability of children of fathers with a bachelor's degree or higher to be in this occupational stratum is 64.4%. Conversely, for children of unschooled fathers, the probability is 7.2%. It is important to highlight that children whose fathers have a college degree are 3.3 times more likely to be in occupational stratum A than the average population and almost 9 times more likely than children of unschooled fathers. Furthermore, as shown in Table 2.1 (**orange** highlight), it is possible to note that the chance that the child will reach stratum A consistently increases as the fathers become more schooled.

When looking at the other extreme of the occupational strata, service workers and commercial vendors and service providers (stratum E) and agricultural workers (stratum F) - blue highlight, the reverse is true: the probability of children of unschooled fathers being in these occupations is 58.4%, more than six times higher in relation to children of fathers with a bachelor's degree or higher (9.0%). This same probability is almost one and a half times higher than the population mean (overall total line, 40.5%). This average, moreover, is strongly determined by children whose fathers have up to the incomplete Elementary or Junior High School levels.

Another way to analyze the results is based on the **median distribution** of children by occupational stratum, according to the fathers' level of schooling. The median demonstrates in which occupational stratum the cutoff point of 50% of the children was, according to the fathers' level of schooling.

For unschooled fathers, for example, the median of the first job was in Stratum F (Diagram 2.2). This means that 50% of their children were in this stratum, and the other 50% distributed in the following strata. In the current **main work** of these children, the median was transferred to stratum E, that is, 50% of the children were in strata E and F and the other 50% of the children were in the other strata (A, B, C and D). This analysis brings two conclusions: (i) in relation to the first job, half of the children of unschooled fathers are in stratum F, the most vulnerable occupational stratum; (ii) in relation to current employment, half of the children of unschooled fathers are in strata E and F, the two most vulnerable strata. Not only are the chances of the first job more concentrated in the less sophisticated stratum, but there are also greater chances of the main job having progressed little, going from stratum F to stratum E.

Median of the distribution

The median is a statistical measure of position that determines the value at which 50% of the elements of a group are concentrated. In this particular case, it is the measure that shows the concentration of 50% of the children, given the specific level of schooling of the father. Therefore, the proposed analysis of the median of the distribution applies to the line of the distribution matrix of the children by occupational strata, given the fathers' level of schooling. The farther to the right, the better the result for the children, as it indicates that at least 50% of them will be in better strata by definition. For example, if the median of the distribution of children of fathers with complete High School level or with a college degree is in Stratum B, at least 50% of these children will be between Strata A and B.

Main work

As defined by IBGE, main work is the only job in which the individual was occupied in the reference week of the survey. Were it the case the person were occupied in more than one job, the one with the longest permanence in the reference period of 365 days should be the one considered. In case of equal length of permanence in the reference period, the one in which the person normally dedicated the greatest number of weekly hours should be the one considered. In case of equality in the number of hours worked during the week, the one that normally provided the highest income should be considered. For more information, see IBGE (2016).

TABLE 2.1

Distribution of children by occupational strata in the main job given their fathers' level of schooling: Brazil, 2014

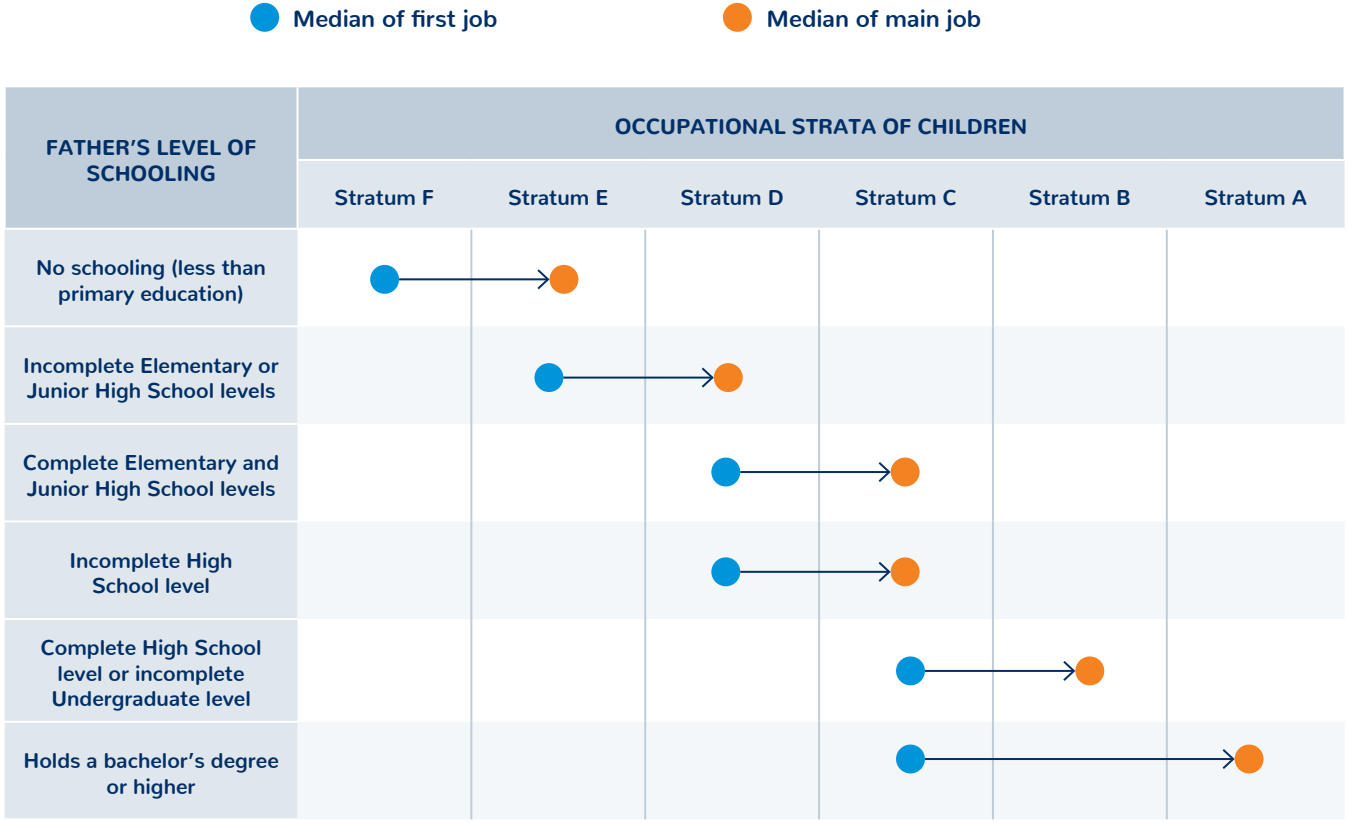
FATHER'S LEVEL OF SCHOOLING	OCCUPATIONAL STRATUM IN THE MAIN JOB						
	Stratum F	Stratum E	Stratum D	Stratum C	Stratum B	Stratum A	Total
No schooling (less than primary education)	26,2%	32,2%	26,1%	4,1%	4,2%	7,2%	100%
Incomplete Elementary or Junior High School levels	11,2%	28,0%	25,6%	10,2%	8,3%	16,8%	100%
Complete Elementary and Junior High School levels	2,9%	24,0%	20,4%	16,0%	10,0%	26,7%	100%
Incomplete High School level	2,6%	21,9%	13,7%	14,0%	17,4%	30,4%	100%
Complete High School level or incomplete Undergraduate level	1,7%	17,1%	13,1%	15,0%	13,4%	40,1%	100%
Holds a bachelor's degree or higher	1,1%	7,9%	4,1%	9,1%	13,4%	64,4%	100%
Total	13,8%	26,7%	22,7%	9,1%	8,0%	19,8%	100%

Source
IMDS based on PNAD 2014 microdata.

Analyzing the entirety of diagram 2.2, it is possible to notice the movement of this median in relation to the less vulnerable occupational strata as fathers' levels of schooling increase. In all strata, there was progress in the median of the main (current) job of children in relation to the first job. However, the differences between children of fathers with low schooling – no schooling and incomplete Elementary or Junior High School level – and those with higher education – who have a bachelor's degree – are clear. Children of fathers

DIAGRAM 2.2

Evolution of the median of the distribution of children among occupational strata, from first job to main job, according to their fathers' level of schooling: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

[20] That which occurs within the same generation, when analyzing different moments of life - in this case, the first job and the job held in the reference week of the survey.

with a bachelor's degree have a median of the first job in stratum C (a more central stratum) and a median of the main job in stratum A (the one with more sophisticated occupations).

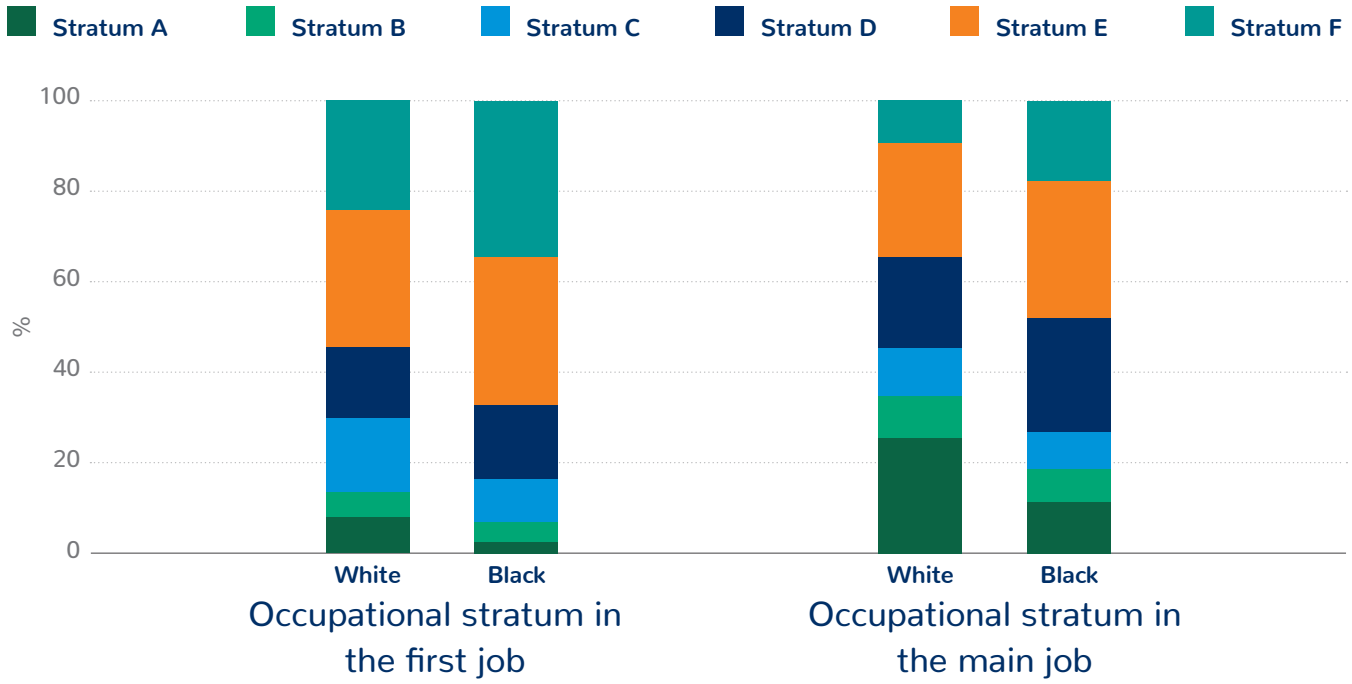
Thus, when comparing the median distribution of children by occupational strata in the first job and in the main job, it is possible to note that, for children of fathers who have a bachelor's degree or higher, in addition to the starting point being more favorable, there occurs the greatest absolute upward intragenerational[20] occupational mobility (stratum C to stratum A).

Considering in this analysis the personal characteristics of the children, differences in the structure of the distribution of children between the occupational strata can be seen. For Blacks,

there is a lower concentration of people in the upper strata (strata A, B and C) than for Whites, 27.3% and 45.4%, respectively. For both groups, most are in the lower strata (D, E and F), but among Blacks the incidence is higher: 72.6% of Black people are concentrated in occupations in strata with lower average income and greater vulnerability, while among Whites, this probability is 54.6%. With regard to intragenerational mobility – comparing the first job with the current main job (in the reference week) – the proportion of Whites who went from the lower half of the occupational strata to the upper half is 15.5%. For Blacks, this same proportion is 10.8%. In other words, in addition to the difference in proportion between Whites and Blacks, absolute upward intragenerational mobility in occupation occurs more markedly for Whites.

GRAPH 2.1

Distribution of children according to occupational stratum in the first job and main job by skin color: Brazil, 2014



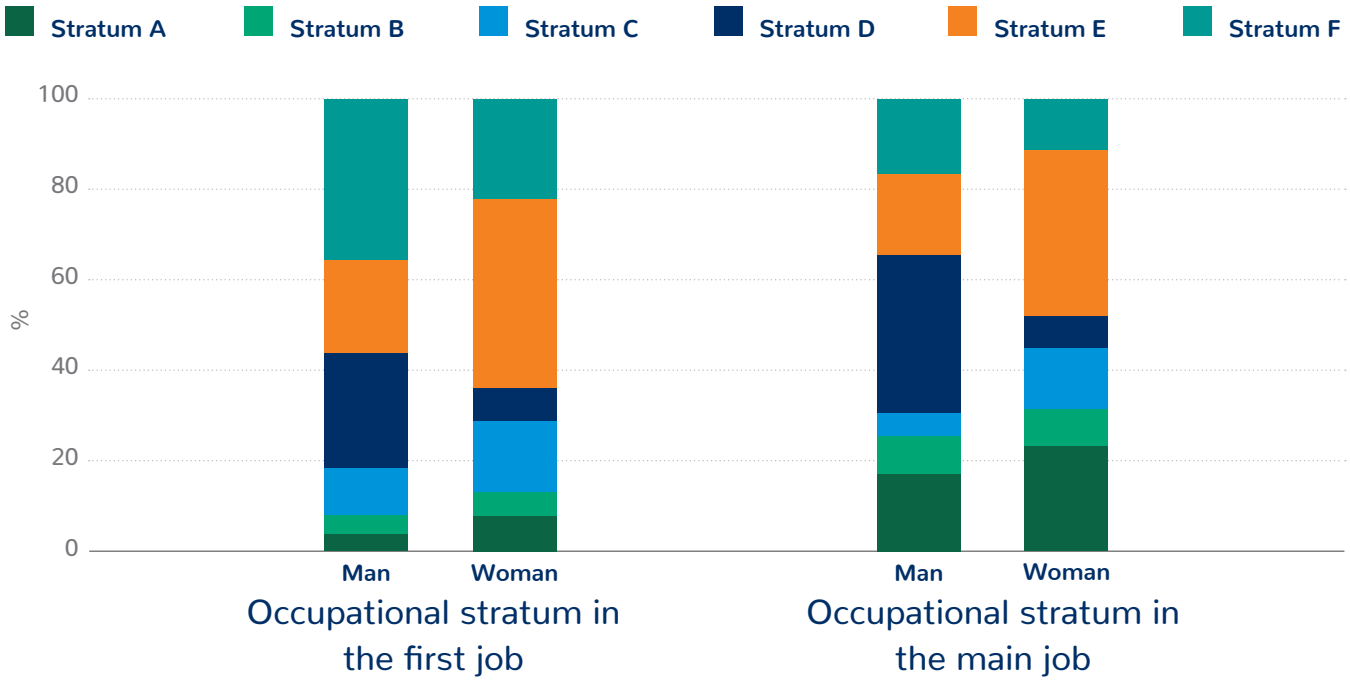
Source
IMDS based on PNAD 2014 microdata.

Regarding the distribution structure for men and women, there is a greater concentration of women in Stratum E at both moments of life: 42.2% in the first job and 37.5% in the main job of the reference week. As for men, the highest concentration, which at the beginning of their insertion in the labor market occurs in Stratum F (36.1%), is now in Stratum D (35.5%). However, in addition to women having a higher percentage concentration in the upper half of occupational strata in the main job than men (44.6% compared to 30.5%), the increase in these strata was 15.9 pp for women and 12.4 pp for men, indicating greater intragenerational mobility among women.

In terms of position in occupation, those whose fathers completed High School or reached incomplete undergraduate level are more likely to be employed on their first job with working papers – 45.4% –, more than three times higher than children of fathers with no schooling – 12.4%. This difference is greater among Blacks – 42.5% compared to 10.0% – than among Whites – 47.1% compared to 16.7%.

GRAPH 2.2

Distribution of children according to occupational stratum in the first job and main job by sex: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

The chances of starting to work as an unpaid worker or for their own use/consumption are 40.9% among the descendants of unschooled fathers - a number more than eight times higher than for those who have a father with at least a bachelor's degree. (4.9%). Still, the chances of Blacks starting in this position in the occupation is greater than that of Whites in the same situation – for children of unschooled fathers, 43.4% compared to 36.3%

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.2

Distribution of children by position on occupation in the first job given their fathers' level of schooling: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	Position on occupation in the first job						
	Employed with working papers	Employed without working papers	Statutory public servant or military personnel	Self-employed	Employer	Unpaid worker or working for personal use/ consumption	Total
No schooling (less than primary education)	12,4%	37,5%	1,0%	8,1%	0,0%	40,9%	100%
Incomplete Elementary or Junior High School levels	26,9%	41,3%	2,3%	7,9%	0,1%	21,6%	100%
Complete Elementary and Junior High School levels	38,5%	40,6%	3,6%	7,0%	0,5%	9,7%	100%
Incomplete High School level	34,7%	44,4%	1,3%	7,3%	0,3%	12,1%	100%
Complete High School level or incomplete Undergraduate level	45,4%	38,7%	4,6%	4,9%	0,7%	5,6%	100%
Holds a bachelor's degree or higher	45,0%	36,5%	5,6%	7,0%	0,9%	4,9%	100%
Total	25,7%	39,5%	2,4%	7,6%	0,2%	24,7%	100%

TABLE 2.3

Distribution of children by occupational situation according to their fathers' level of schooling: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	Occupational situation			
	Occupied	Unoccupied	Inactive	Total
No schooling (less than primary education)	69,5%	2,8%	27,7%	100%
Incomplete Elementary or Junior High School levels	74,0%	3,6%	22,4%	100%
Complete Elementary and Junior High School levels	78,2%	4,1%	17,8%	100%
Incomplete High School level	80,9%	7,3%	11,7%	100%
Complete High School level or incomplete Undergraduate level	78,2%	5,4%	16,4%	100%
Holds a bachelor's degree or higher	82,3%	3,6%	14,2%	100%
Total	73,7%	3,6%	22,8%	100%

Source
IMDS based on PNAD 2014 microdata.

and for those with fathers with a bachelor's degree or higher, 6.5% compared to 4.2%. If the cut by sex is analyzed, the chances are greater for men than for women: among children of unschooled fathers, 46.6% compared to 35.1%, and among children of fathers with a bachelor's degree or higher, 6.2% compared to 3.6%.

Subsequently, the *occupational situation* will be analyzed: occupied, unoccupied and inactive. Table 2.3 presents the matrix with these results given the fathers' educational level. The results show that the probability of being occupied, in general, increases as the level of education of the fathers is higher (**blue** arrow), while the probability of inactivity decreases, keeping an inverse relationship with the fathers' level of schooling (**orange** arrow).

This pattern is similar for men and women, though, as ascertained from labor market li-

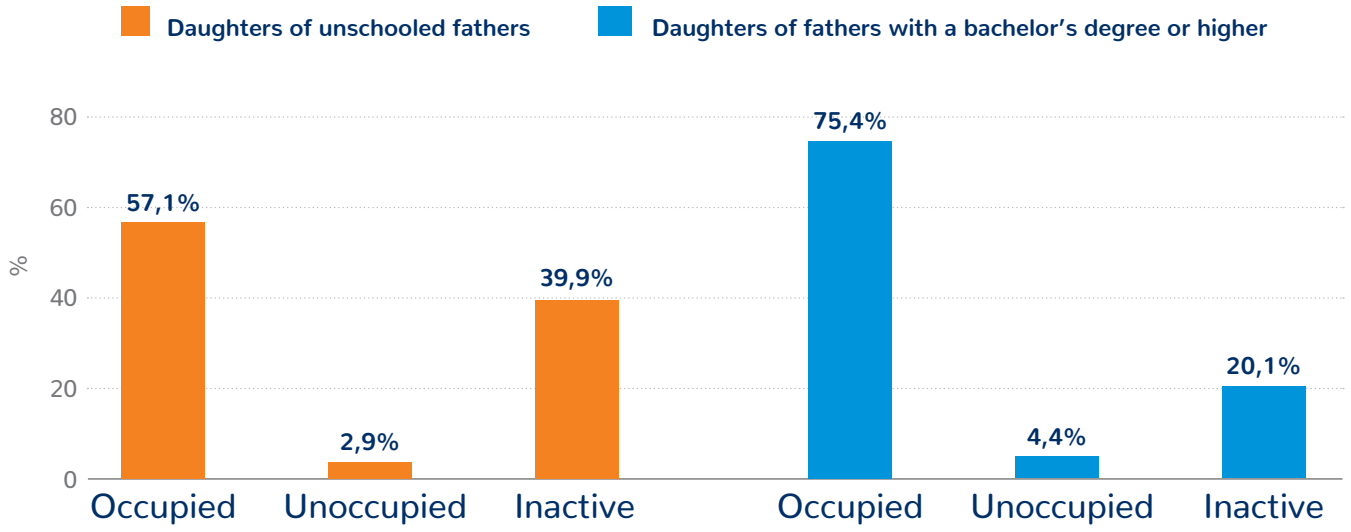
terature, the level of participation of women is historically lower than that of men. Note, however, that the probability of inactivity among is 39.9% (**orange** column), while for daughters of fathers with at least a bachelor's degree, it is 20.1% (**blue** column) (Graph 2.3).

Still, it has become apparent that in rural areas, the percentage of employed persons (77.1%) is higher than that observed in urban areas (73.1%) and the concentration of inactive people decreases, even though similar patterns are observed (21.3% against 23%) (Graph 2.4).

Among the group of occupied children, the *position on occupation in the main job* indicator makes it possible to combine the position of the children in the main job and the fathers' level of schooling. Table 2.4 shows that the probability that children of unschooled fathers are employed with working papers is 32.0%. On the other hand, the probability that they do not have working papers at work is 20.3%.

GRAPH 2.3

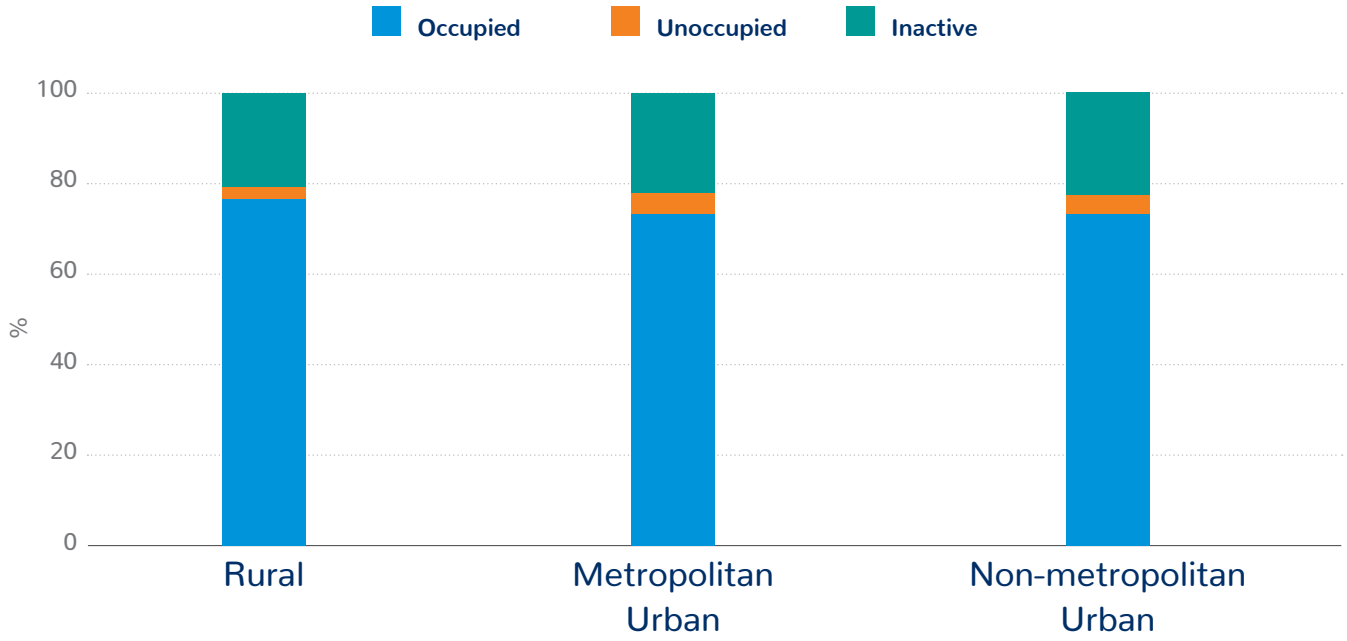
Distribution of daughters according to occupational situation, given the fathers' level of schooling: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

GRAPH 2.4

Distribution of children according to occupational situation by area of residence: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

Analyzing those employed with and without working papers, it is possible to notice a typical pattern that relates the absence of working papers to the father's level of schooling. Among the children of parents with no schooling, 20.3% are employed without working papers, while among the children of parents with a university degree, 11.4% are employed without working papers. In other words, there is a reduction almost by half in the probability of absence of employment with working papers for children of fathers with at least a bachelor's degree, compared to children of fathers with no schooling.

As the fathers' level of schooling increases, the probability that their children are unpaid workers, or workers in construction or production, working for their own use or consumption decreases by more than ten times among children of unschooled fathers (11.5%), and children of fathers with bachelors' degrees (1.0%).

If statutory civil servants, military personnel, and employers are considered, there is a clear increase in the probability that children will be in these positions with the increase in the fathers' level of schooling. In both positions, this probability is

TABLE 2.4

Distribution of children occupied by position on occupation in the main job according to their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	POSITION ON OCCUPATION IN THE MAIN JOB						
	Employed with working papers	Employed without working papers	Statutory public servant or military personnel	Self-employed	Employer	Unpaid worker or working for personal use/consumption	Total
No schooling (less than primary education)	**32,0%**	**20,3%**	5,0%	27,8%	3,4%	11,5%	100%
Incomplete Elementary or Junior High School levels	43,3%	14,7%	9,9%	22,6%	4,8%	4,7%	100%
Complete Elementary and Junior High School levels	52,1%	12,9%	10,8%	16,5%	6,0%	1,7%	100%
Incomplete High School level	45,7%	17,9%	8,7%	17,6%	8,4%	1,7%	100%
Complete High School level or incomplete Undergraduate level	52,1%	11,1%	12,7%	16,7%	5,9%	1,6%	100%
Holds a bachelor's degree or higher	38,9%	11,4%	18,5%	17,9%	12,3%	1,0%	100%
Total	41,0%	15,8%	9,2%	22,8%	5,0%	6,1%	100%

more than 3 times greater for children of fathers holding bachelors' degrees or higher, than for children of unschooled fathers.

Regarding the allocation of time between study and work, the indicator shows that the probability that people work and study is directly related to the fathers' level of schooling (Table 2.5). On the other hand, the probability that they neither work nor study is inversely related: 29.7% for children of unschooled fathers, and 15.7% for children of fathers with a bachelor's degree or higher.

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.5

Distribution of children by situation of work activity and study according to their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	ACTIVITY STATUS: STUDY OR WORK				
	Only studies	Only works	Works and studies	Neither works nor studies	Total
No schooling (less than primary education)	0,9%	67,2%	2,3%	29,7%	100%
Incomplete Elementary or Junior High School levels	1,0%	70,5%	3,5%	25,0%	100%
Complete Elementary and Junior High School levels	1,4%	72,8%	5,3%	20,5%	100%
Incomplete High School level	1,2%	73,4%	7,5%	17,9%	100%
Complete High School level or incomplete Undergraduate level	2,2%	70,1%	8,1%	19,6%	100%
Holds a bachelor's degree or higher	2,1%	74,1%	8,1%	15,7%	100%
Total	1,2%	69,7%	3,9%	25,2%	100%

Source
IMDS based on PNAD 2014 microdata.

When comparing the results for men and women, this indicator shows that the probability that women neither study nor work is more than twice that of men – 35.7% compared to 13.7% – a pattern observed for all levels of schooling of fathers. On the other hand, another marked difference is in the probability that they only work. For women it is 58.6%, while for men, 81.9%. The data indicate that, on the one hand, there is a greater probability for men, than for women, that they only work, and greater probability for women, than for men, that they only study – 1.6% compared to 0 .7% for men – or study and work – 4.1% compared to 3.7% for men.

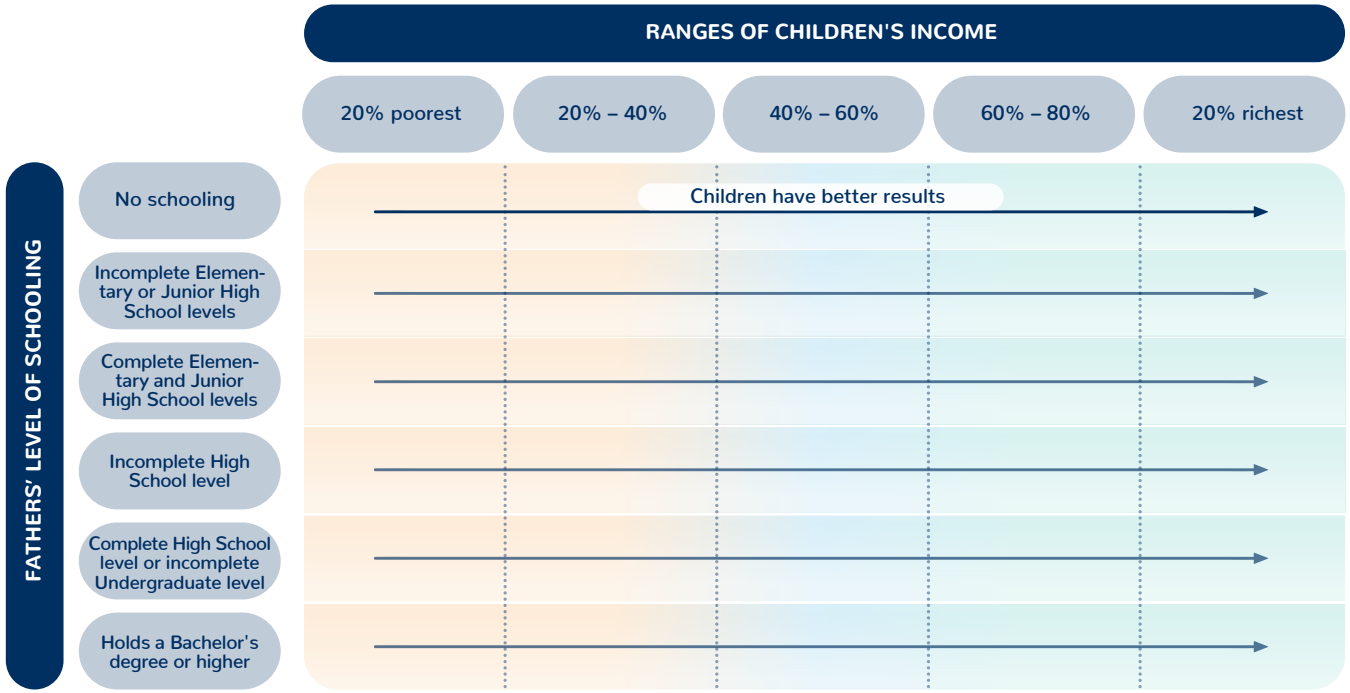
2.2. Relationship between fathers' level of schooling and children's income

After analyzing the labor market, the next step is to add information as to children's income levels, given the fathers' level of schooling, so that it is possible to verify if there is any kind of relationship between the fathers' level of schooling and the children's income.

For this analysis, income indicators were constructed in ascending and ordered bands: fifths of income distribution (Diagram 2.3). Thus, children who are part of the 1st fifth are among the 20% lowest incomes in the distribution, while children who are part of the

DIAGRAM 2.3

How to analyze indicators of the fifths of children's income distribution, given the fathers' level of schooling.



Source
Own elaboration. IMDS.

5th fifth are part of the 20% highest incomes in the distribution. The closer to the 5th fifth, therefore, the better the children's results.

The indicator *fifths of per capita household income distribution* follows the distribution shown in diagram 2.3 and considers the distribution of children according to the average per person household income, that is, it does not consider the exclusive income of the children, but the household reality in which they are inserted. Table 2.6 shows that, except for children of unschooled fathers, the proportion of children is increasing among the fifth and children of fathers with more schooling are more likely to be in households with higher incomes.

If only children of unschooled fathers are analyzed, the distribution is practically uniform: the probability of being in every fifth of the distribution is quite close, except for the highest income fifth – only 12.0% of children of unschooled fathers are among the 20% of households with the highest per capita income in Brazil.

For children of fathers with incomplete Elementary or Junior High School levels, this probability rises to 28.7%. Of those with fathers who have complete High School level or incomplete Undergraduate levels, more than half are in the fifth of the highest income levels (54.0%). And if fathers have bachelor's degrees or higher, this probability rises to 80.6%. Thus, a strong relationship between

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.6

Distribution of children by fifths of per capita household income and their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	Fifths of per capita household income distribution					
	1st	2nd	3rd	4th	5th	Total
No schooling (less than primary education)	23,5%	21,6%	22,1%	20,7%	12,0%	100%
Incomplete Elementary or Junior High School levels	9,9%	16,3%	18,9%	26,2%	28,7%	100%
Complete Elementary and Junior High School levels	7,8%	10,9%	16,8%	26,1%	38,3%	100%
Incomplete High School level	9,7%	9,9%	17,9%	25,6%	36,8%	100%
Complete High School level or incomplete Undergraduate level	4,8%	7,1%	12,8%	21,3%	54,0%	100%
Holds a bachelor's degree or higher	2,3%	2,6%	4,7%	9,8%	80,6%	100%
Total	13,6%	16,1%	18,5%	23,0%	28,8%	100%

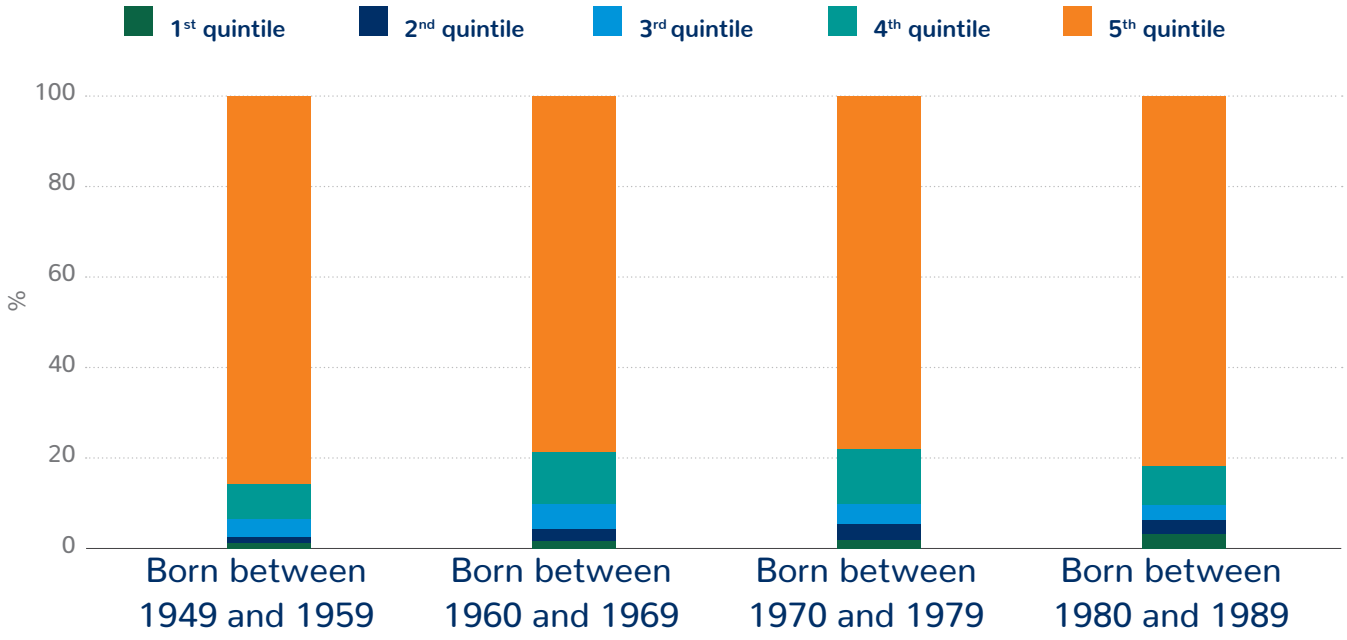
the fathers' level of schooling and the children's household income is indicated.

Looking at the 20% lowest income column in Table 2.6, there is a remarkable reduction in the probability that children of more educated fathers are in the first fifth of income. In addition, having some schooling (from Elementary or Junior High School levels onwards) is already enough for the chances of the child to be in the lowest per capita household income group (1st fifth) to fall to less than half (children of unschooled fathers, 23.5%, and children of fathers with incomplete Elementary or Junior High School levels, 9.9%).

Disaggregating the analysis by birth cohort, for children of fathers holding a bachelor's degree or higher, it is noted that people born between 1949 and 1959 have 87.6% probability

GRAPH 2.5

Distribution of children whose fathers had undergraduate or graduate degrees by fifths of per capita household income according to birth cohort: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

of being in households in the highest income group of the distribution (Graph 2.5), which indicates that the oldest cohort was the one most likely to be in the 5th fifth. Over the generations, this probability decreased, but the pattern remained: for all generations, the greater the father's level of schooling, the higher the child's per capita household income.

Analyzes by skin color or racial groups related to sex indicate that the differences between men and women are greater for Black people than for White people.

In the case of White people, male children of fathers with at least a bachelor's degree have an 85.3% chance of being in the fifth quintile. For men, children of unschooled fathers, this chance is 19.2%. Among women, the odds are 84.0% and 17.2%, respectively.

But for Blacks, the probability of men, children of fathers holding a bachelor's degree or higher, being in the 5th quintile is 68.9%, while for children of fathers with no schooling, it is 9.5%. For Black women, the odds are 56.3% and 7.4%, respectively. In other words, Black women have the worst chances of reaching the 5th quintile of income.

Although Black women are more educated than Black men in virtually all educational categories of their fathers, the results for per capita household income are quite different. The probability of Black men being among the 40% higher incomes is greater than that of Black women, 41.9% compared to 35.9%, regardless of their fathers' level of schooling. Among Whites, women are also more likely to achieve higher levels of education, but they are not more likely than men to be among the highest per capita household income brackets. These results reinforce that disparities between men and women exist for both skin color and race, but that this distance between the sexes is more accentuated for Blacks.

The data show some evidence about the behavior of the children's income given the fathers' level of schooling. However, indicators related to income require caution in the analysis: the analyzed age group of the children is from 25 to 65 years of age and the sample used only considers those who were able to inform the fathers' level of schooling, which can influence the estimates related to low income.

DIFFERENT APPROACHES TO THE POVERTY SITUATION

It is known that poverty is derived from multidimensional aspects, but when treated as income insufficiency – families with per capita household income below a threshold – its analysis may differ according to the poverty (or extreme poverty) line used. In addition, the incidence of poverty differs according to the universe analyzed: in this study, the universe considered is people aged 25 to 65 with information on their fathers' level of schooling, while in specific studies of poverty, in general, the entire population is considered. In addition, it is noteworthy that the data used are based on the 2014 PNAD, therefore, they do not capture variations in poverty situation for subsequent years.

In the system of indicators developed by IMDS, the situation of children's poverty, given their fathers' level of schooling, is made considering two different poverty lines: Bolsa Família and the World Bank. The similarities and differences of the results will be presented below.

The *Poverty situation indicator* (*Bolsa Família*), based on poverty parameters defined by the *Bolsa Família* Program in 2014, considers people with a per capita household income of between R$77.01 and R$154 as in a situation of poverty and extreme poverty, up to R$ 77.00, respectively.

According to the data presented, only 4.2% of the people were in a situation of poverty or extreme poverty, which is equivalent to 2,469,365 people - population estimate based on the weights of residents selected for the Socio-Occupational Mobility Supplement and aged between 25 and 65[21], adjusted for population. Among these people, the probability was that 63.7% were children of unschooled fathers (1,573,029 people). If we consider the total population (58,956,755 people), this same probability – that they are children of unschooled fathers (20,449,332 people) – becomes

[21] Emphasizing that the percentage of poor and extremely poor in this study considers only the population from 25 to 65 years of age and, therefore, does not include children or older people.

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.7

Distribution of children by poverty situation according to their fathers' level of schooling: Poverty Line – *Bolsa Família*, Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	POVERTY SITUATION (BOLSA FAMÍLIA)			
	Extreme poverty	Poverty	Out of poverty	Total
No schooling (less than primary education)	3,2%	4,5%	92,3%	100%
Incomplete Elementary or Junior High School levels	1,3%	1,5%	97,2%	100%
Complete Elementary and Junior High School levels	1,0%	1,0%	98,1%	100%
Incomplete High School level	0,9%	0,7%	98,4%	100%
Complete High School level or incomplete Undergraduate level	0,8%	0,4%	98,8%	100%
Holds a bachelor's degree or higher	0,7%	0,2%	99,1%	100%
Total	1,9%	2,3%	95,8%	100%

34.7%. In other words, the probability that a person is the child of an unschooled father is greater among the poor, which reveals a strong relationship between the lack of schooling of the fathers and the poverty situation of the children.

The probability of someone being extremely poor or poor given that they have an unschooled father is 7.7% - compared to 2.8% for children of fathers with incomplete Elementary or Junior High School levels. The chance of poverty is even lower for children of more educated fathers (Table 2.7).

From the possible population cuts, it is noticeable that Black women and men, the children of unschooled fathers, have a 9.8% and 9.2% chance of being in poverty or extreme poverty, respectively. For White women and men, the odds are 4.4% and 4.5%. In all cases, the relationship between this probability and the father's schooling is well characterized and does not differ substantially.

The most vulnerable group is that composed of Black men, the children of unschooled fathers, living in the rural Northeast: the probability of their being in poverty is 24.7%.

Based on the *Poverty situation (World Bank)* indicator, in extreme poverty situation (according to the international poverty line) and poverty situation (according to the international poverty line for upper middle-income countries) are those people with a per capita household income of less than US$ 1.90/day (Purchasing Power Parity – PPP) and US$ 5.50/day (PPP), respectively[22] (Table 2.8).

When we consider this indicator, the situation that presents itself is more dramatic – more than a quarter (26.5%) of children of unschooled fathers have a chance of being in a situation of poverty or extreme poverty. This probability is, respectively, 11.5%, 8.3%, 10.7%,

[22] The 2011 purchasing power parity conversion rate for private consumption was used, equivalent to R$1.66 to US$1.00, inflated by the National Extended Consumer Price Index (IPCA), according to the IBGE application. The lines were updated for October 2014, the date of collection of the PNAD, from the IPCA of July 2011.

Source
Imds com base nos microdados da PNAD 2014.

TABLE 2.8

Distribution of children by poverty situation according to their fathers' level of schooling: Poverty Line – World Bank, Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	Poverty situation (World Bank)			
	Extreme poverty	Poverty	Out of poverty	Total
No schooling (less than primary education)	5,1%	21,4%	73,5%	100%
Incomplete Elementary or Junior High School levels	1,9%	9,6%	88,5%	100%
Complete Elementary and Junior High School levels	1,6%	6,7%	91,7%	100%
Incomplete High School level	1,1%	9,6%	89,4%	100%
Complete High School level or incomplete Undergraduate level	0,9%	4,3%	94,8%	100%
Holds a bachelor's degree or higher	0,8%	1,5%	97,6%	100%
Total	2,8%	12,6%	84,6%	100%

5.2% and 2.3% for children of fathers with incomplete Elementary or Junior High School levels, complete Elementary and Junior High School levels, incomplete High School level, complete High School level or incomplete undergraduate level, and those with bachelor's degrees or higher.

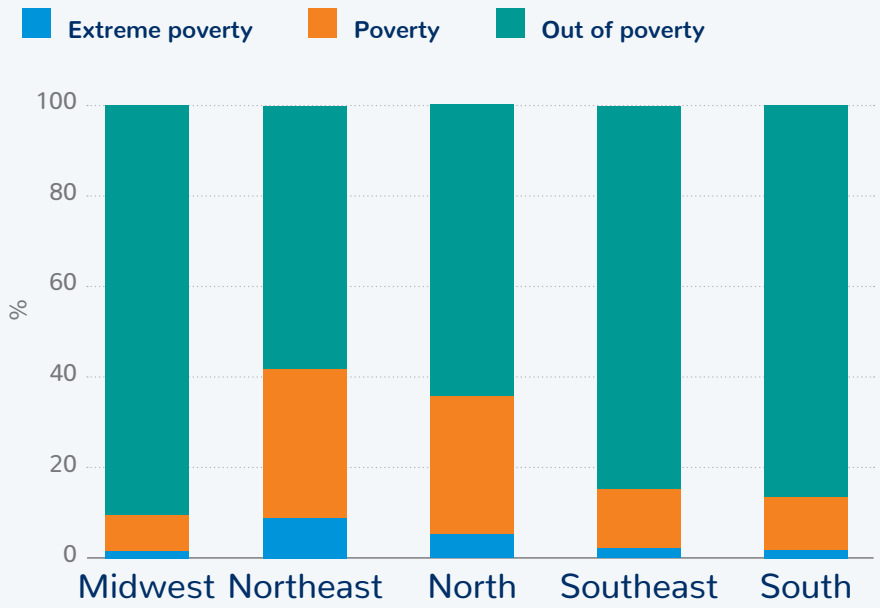
Among children of unschooled fathers, the probability of poverty or extreme poverty among White men is 17.6%, while for White women it is 20.1%. Continuing the analysis for this group of level of schooling of fathers, Black men have a 29.3% probability of falling below the poverty line and Black women have a 32.1% chance of being in the same situation.

Still, among children of unschooled fathers, there is greater probability of being in poverty in the Northeast (41.6%), followed by the North (36.1%) and in rural areas (45.0%).

Source
IMDS based on PNAD 2014 microdata.

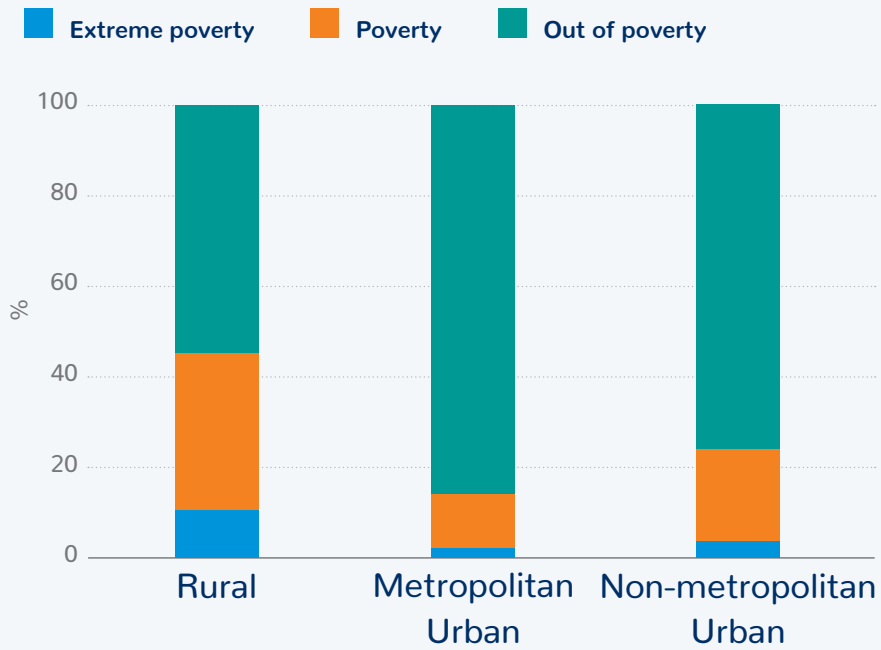
GRAPH 2.6

Distribution of children according to poverty situation and region of the country: Brazil, 2014



GRAPH 2.7

Distribution of children according to situation of poverty and area of residence: Brazil, 2014



In a complementary way, starting with the analysis of indicators *Fifths of labor income distribution* and *Fifths of income distribution from all sources*, naturally, a pattern quite similar to the one presented above can be seen. But there are aspects that must be considered.

While the probability that children of fathers with bachelor's degrees are in the highest fifths of labor income is 74.0%, the probability that these children are in the highest fifths of income distribution from all sources is 64.8%. Compared to the probability of being in the highest fifths of per capita household income, as seen above, both are smaller, which may indicate the weight that the household structure (see section 3) has in the position of people in per capita household income distribution.

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.9

Distribution of occupied children by fifths of labor income and income from all sources, given their fathers' level of schooling: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	FIFTHS OF LABOR INCOME DISTRIBUTION						FIFTHS OF INCOME DISTRIBUTION FROM ALL SOURCES					
	1st	2nd	3rd	4th	5th	Total	1st	2nd	3rd	4th	5th	Total
No schooling (less than primary education)	31,2%	23,0%	17,2%	17,8%	10,9%	100%	23,7%	28,9%	20,5%	16,8%	10,1%	100%
Incomplete Elementary or Junior High School levels	11,8%	15,5%	21,5%	24,4%	26,8%	100%	19,0%	15,1%	19,8%	22,1%	24,1%	100%
Complete Elementary and Junior High School levels	6,7%	11,2%	21,0%	26,3%	34,7%	100%	15,8%	11,1%	17,6%	25,1%	30,4%	100%
Incomplete High School level	4,5%	13,0%	23,2%	25,4%	34,0%	100%	17,8%	12,1%	19,1%	26,9%	24,5%	100%
Complete High School level or incomplete Undergraduate level	3,9%	7,9%	14,7%	25,7%	47,9%	100%	16,9%	6,8%	12,6%	22,1%	41,6%	100%
Holds a bachelor's degree or higher	3,7%	3,9%	6,7%	11,9%	74,0%	100%	13,5%	3,3%	6,9%	11,6%	64,8%	100%
Total	16,4%	16,1%	18,5%	21,8%	27,2%	100%	19,9%	18,1%	18,5%	20,0%	23,5%	100%

Looking at the 20% lowest incomes from labor, the chance that children of unschooled fathers are in this position is 31.2%, while for children of fathers with a bachelors' degree or higher it is 3.7%. In other words, there is a high probability that children of unschooled fathers are among those with lower incomes as adults, while the chance for children of highly educated parents is slight.

Among the quintiles of income distribution from all sources, this difference is attenuated: on the one hand, the chance of children of unschooled fathers being among the 20% lowest incomes is 23.7%, whereas, among children of fathers with bachelors' degrees or higher, it is a 13.5% chance.

If you analyze differences in relation to sex and skin color or race groups, you also have a confirmation of the probability patterns. However, it is worth emphasizing the differences between the manifestations of this pattern for different income analyses.

Black women, the children of unschooled fathers, have a 46.9% chance of being in the 1st quintiles of labor income (20% lower income) and 4.4% of being in the 5th quintiles (20% higher income). In the case of fathers with bachelors' degrees, the chance of reaching the 5th quintiles of income is 46.9% – lower than in per capita household income distribution. For Black men, whose fathers had no schooling, the probability of being in the 1st and 5th quintiles of labor income is 26.5% and 11.01%, respectively. In the case of fathers with a bachelors' degree, Black men have a 72.7% chance of composing the 20% with the highest labor income – a greater probability than for per capita household income. In other words, the numbers suggest that the household structure increases the possibility of Black women being in the highest fifth of the per capita household income distribution, while the opposite occurs for Black men.

In the case of White people, both women and men have elements in the household structure that increase their chance of being in the highest fifth of the per capita household income distribution. For children of fathers with a university degree, women have a 71.8% chance of being in the highest fifth of the labor income distribution, and men, 80.4%.

In relation to income from all sources, for all disaggregation of sex and skin color or race, there are elements in the household structure that increase the chances of people being among the 20% highest per capita household income in relation to the chances that they are among the 20% highest incomes from all sources.

From the fifths of income distribution from all sources, Black women and men, the children of fathers with a bachelors' degree or higher, have 42.6% and 65.5% chance of being in the 5th quintile of the distribution, respectively. For White people who are the children of parents with a bachelors' degree or higher, the chance of reaching the 5th quintile of income distribution from all sources is 75.9% for men and 58.8% for women.

In terms of ranges of *labor income*, one can see that 91.0% of children of unschooled individuals receive up to 3 minimum wages – also considering

people without income –, with almost 50% of those without income or with income of up to 1 minimum wage. On the other hand, only 29.6% of children of fathers with at least a bachelors' degree receive up to 3 minimum wages, while more than 50% receive 5 minimum wages or more (Table 2.10). This information complements and reaffirms the analyses presented above: there is a strong relationship between the fathers' level of schooling and labor income earned by their children.

If the *ranges of per capita household income* are observed, the pattern of concentration at the extremes is also noticeable: the probability that children of unschooled fathers live with up to 1 minimum wage is 64.2% – the only group of children in which more than 50%

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.10

Distribution of occupied children by ranges of labor income in minimum wages, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	RANGES OF LABOR INCOME							
	Up to 1/4 MW	More than 1/4 and up to 1 MW	More than 1 and up to 3 MW	More than 3 and up to 5 MW	More than 5 and up to 10 MW	More than 10 MW	Without income	Total
No schooling (less than primary education)	4,6%	31,2%	43,3%	5,6%	2,6%	0,6%	11,9%	100%
Incomplete Elementary or Junior High School levels	0,9%	16,8%	54,1%	13,3%	7,1%	2,9%	4,8%	100%
Complete Elementary and Junior High School levels	0,2%	12,3%	54,8%	16,3%	9,5%	5,1%	1,8%	100%
Incomplete High School level	0,4%	12,1%	58,3%	11,2%	9,3%	6,6%	1,8%	100%
Complete High School level or incomplete Undergraduate level	0,2%	6,6%	47,5%	19,5%	15,2%	9,3%	1,7%	100%
Holds a bachelor's degree or higher	0,5%	3,9%	24,2%	19,1%	27,8%	23,4%	1,0%	100%
Total	2,0%	19,3%	48,3%	12,0%	7,9%	4,2%	6,3%	100%

of them live on up to 1 minimum wage. This same probability, for children of fathers with at least a bachelors' degree, is 8.6%.

Although the systematization presented herein was based on the distribution of income by quintiles, note that there is also a possibility of analysis for the distribution by deciles, found between *individual and household income* indicators, and the relationships discussed herein are similar for this way of presenting income distribution.

Source
IMDS based on PNAD 2014 microdata.

TABLE 2.11

Distribution of children by ranges of per capita household income given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	RANGES OF PER CAPITA HOUSEHOLD INCOME								
	Up to 1/4 MW	More than 1/4 and up to 1/2 MW	More than 1/2 and up to 1 MW	More than 1 and up to 2 MW	More than 2 and up to 3 MW	More than 3 and up to 5 MW	More than 5 MW	Without income	Total
No schooling (less than primary education)	9,9%	20,8%	33,0%	26,2%	5,8%	2,7%	1,2%	0,5%	100%
Incomplete Elementary or Junior High School levels	3,3%	10,6%	27,1%	34,0%	12,4%	7,4%	4,8%	0,4%	100%
Complete Elementary and Junior High School levels	2,5%	7,3%	21,4%	34,4%	14,2%	11,0%	8,7%	0,5%	100%
Incomplete High School level	2,3%	8,0%	22,5%	32,8%	13,3%	11,5%	9,4%	0,4%	100%
Complete High School level or incomplete Undergraduate level	1,3%	4,6%	15,6%	28,7%	17,3%	15,1%	17,1%	0,4%	100%
Holds a bachelor's degree or higher	0,4%	2,2%	5,4%	13,3%	15,7%	22,5%	39,9%	0,6%	100%
Total	5,2%	12,9%	26,5%	29,7%	10,9%	7,6%	6,8%	0,4%	100%

2.3. Results compared between 1996 and 2014

In addition to analyses of the association between socioeconomic indicators of children and their fathers' level of schooling from the most recent data – from PNAD 2014 –, through the panel *Intergenerational Mobility: PNAD 2014*, a comparative analysis will be presented with the results obtained based on PNAD 1996.

From the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*, it is possible to find these comparative results for people from 25 to 64 years of age, according to their age on the reference day of the surveys. For this purpose, the 2014 PNAD sample was treated and only reference persons and spouses responding to the socio-occupational mobility supplement were considered, allowing compatibility for comparison with the 1996 survey and its supplement on Social Mobility, which justifies variations in the 2014 results presented in this subsection and in previous subsections.

Starting with the position on occupation, it is noted that the results for 1996 and 2014 follow similar distribution patterns. The level of schooling of fathers has an inverse relationship with the probability that their children are employed without working papers in the two years. In 1996, among children of unschooled fathers, the probability of being employed without working papers was 21.6%, against 9.0% for children of fathers with a bachelor's degree. In 2014, these probabilities were close and reflected the same aspect – 19.9% and 9.3%, respectively (Table 2.12).

The same happens with the probability of the child being an unpaid worker or working for their own use or consumption. Children of unschooled fathers had a 12.8% chance in 1996 and 11.3% in 2014 of being in this category. For children of fathers with a bachelor's degree, the probability decreased to 1.6% and 0.9% each year (Table 2.12).

In addition, the employer category was more likely for children of more educated fathers, 16.8% in 1996, and 14.3% in 2014, compared to children of unschooled fathers (2.8% and 3.6 %, in each year) (Table 2.12).

Among the results obtained in 1996 and 2014, for ranges of per capita household income, one notes that children of unschooled fathers who, in the first year, were more likely to receive up to 1/4 of the minimum wage

TABLE 2.12

Distribution of children by position on occupation in the main job given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	POSITION ON OCCUPATION IN THE MAIN JOB											
	PNAD 1996						PNAD 2014					
	Employed with working papers	Employed without working papers	Statutory public servant or military personnel	Self-employed	Employer	Unpaid worker or working for personal use/ consumption	Employed with working papers	Employed without working papers	Statutory public servant or military personnel	Self-employed	Employer	Unpaid worker or working for personal use/ consumption
No schooling (less than primary education)	26,8%	21,6%	4,8%	31,2%	2,8%	12,8%	31,4%	19,9%	5,2%	28,3%	3,6%	11,3%
Incomplete Elementary or Junior High School levels	33,5%	14,8%	10,6%	27,4%	6,3%	7,3%	41,3%	14,2%	10,5%	23,5%	5,6%	4,9%
Complete Elementary and Junior High School or incomplete High School level	37,2%	10,0%	19,5%	20,4%	12,5%	2,6%	48,7%	12.5%	10,7%	18,5%	7,7%	1,9%
Complete High School level or incomplete Undergraduate level	34,4%	10,4%	20,0%	21,3%	12,5%	1,4%	47,9%	11,4%	14,4%	17,6%	7,5%	1,2%
Holds a bachelor's degree or higher	32,4%	9,0%	19,1%	21,0%	16,8%	1,6%	36,0%	9,3%	20,0%	19,5%	14,3%	0,9%
Total	31,0%	17,0%	9,2%	28,3%	5,6%	9,0%	38,7%	15,6%	9,5%	24,1%	5,7%	6,4%

(71.0%), in the second year had 31.3% probability of receiving more than 1/2 to 1 minimum wage and 25.4% probability of receiving more than 1 to 2 minimum wages (Table 2.13). So, even though there is a relationship between the father's level of schooling and the child's per capita household income in both moments – the higher the fathers' level of schooling, the higher the income –, there was a gain in relation to per capita household income by ranges of minimum wage regardless of the level of schooling of the fathers.

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 2.13

Distribution of occupied children by ranges of per capita household income in minimum wages given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	RANGES OF PER CAPITA HOUSEHOLD INCOME															
	PNAD 1996								PNAD 2014							
	Without income	Up to 1/4 MW	More than 1/4 and up to 1/2 MW	More than 1/2 and up to 1 MW	More than 1 and up to 2 MW	More than 2 and up to 3 MW	More than 3 and up to 5 MW	More than 5 MW	Without income	Up to 1/4 MW	More than 1/4 and up to 1/2 MW	More than 1/2 and up to 1 MW	More than 1 and up to 2 MW	More than 2 and up to 3 MW	More than 3 and up to 5 MW	More than 5 MW
No schooling (less than primary education)	2,2%	71,0%	17,0%	7,2%	2,0%	0,4%	0,2%	0,0%	0,5%	11,2%	21,5%	31,3%	25,4%	6,1%	2,7%	1,3%
Incomplete Elementary or Junior High School levels	1,3%	47,1%	24,6%	16,6%	7,4%	1,8%	0,9%	0,3%	0,5%	3,8%	11,5%	25,0%	33,0%	12,2%	8,3%	5,8%
Complete Elementary and Junior High School or incomplete High School level	1,3%	23,0%	22,3%	25,9%	17,3%	5,5%	3,3%	1,5%	0,7%	3,0%	7,7%	19,9%	31,4%	14,3%	12,5%	10,5%
Complete High School level or incomplete Undergraduate level	0,7%	14,1%	18,1%	26,0%	23,9%	9,5%	5,4%	2,3%	0,6%	1,5%	5,3%	15,6%	26,0%	15,4%	14,8%	20,7%
Holds a bachelor's degree or higher	0,6%	7,5%	13,0%	20,9%	28,7%	13,3%	10,2%	5,6%	0,6%	0,4%	2,4%	5,9%	14,0%	15,0%	20,8%	40,9%
Total	1,7%	54,1%	20,9%	13,5%	6,5%	1,8%	1,0%	0,4%	0,5%	6,1%	14,0%	25,3%	28,6%	10,5%	7,7%	7,3%

For the indicator for *ranges of labor income*, there is a similar evolution: there is an increase in labor income in relation to the ranges of minimum wage for children of fathers at any level of schooling. However, this increase is more accentuated for children of more educated fathers, maintaining the following relationship: the higher the father's level of schooling, the greater the child's labor income.

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 2.14

Distribution of occupied children by ranges of labor income in minimum wages, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	RANGES OF LABOR INCOME													
	PNAD 1996							PNAD 2014						
	Without income	Up to 1/4 MW	More than 1/4 and up to 1 MW	More than 1 and up to 3 MW	More than 3 and up to 5 MW	More than 5 and up to 10 MW	More than 10 MW	Without income	Up to 1/4 MW	More than 1/4 and up to 1 MW	More than 1 and up to 3 MW	More than 3 and up to 5 MW	More than 5 and up to 10 MW	More than 10 MW
No schooling (less than primary education)	41,6%	25,7%	26,8%	5,3%	0,4%	0,2%	0,0%	11,6%	4,9%	31,2%	43,0%	6,0%	2,6%	0,7%
Incomplete Elementary or Junior High School levels	35,8%	13,6%	33,1%	14,2%	2,1%	1,0%	0,2%	5,1%	0,9%	15,5%	52,3%	14,4%	8,2%	3,6%
Complete Elementary and Junior High School or incomplete High School level	28,1%	6,6%	29,1%	25,3%	6,3%	3,2%	1,1%	2,1%	0,3%	10,3%	51,2%	17,8%	11,2%	7,1%
Complete High School level or incomplete Undergraduate level	25,4%	4,0%	25,3%	29,6%	8,6%	5,9%	1,2%	1,2%	0,3%	6,9%	40,1%	21,3%	17,5%	12,6%
Holds a bachelor's degree or higher	23,3%	2,2%	15,8%	32,5%	13,3%	9,9%	3,0%	0,9%	0,2%	3,6%	20,3%	16,2%	28,8%	30,0%
Total	37,3%	17,8%	29,7%	11,8%	2,0%	1,1%	0,2%	6,6%	2,2%	19,2%	46,1%	12,4%	8,4%	5,1%

The poverty indicator, along World Bank lines, showed an improvement for the general population analyzed: in 2014, the probability of being out of poverty was 82.4%, compared to 62.0% in 1996. This improvement can be seen from children of unschooled parents, who in 1996 had a 54.6% chance of being below the poverty line and, in 2014, rose to a probability of 28.6% (Table 2.14).

Even so, there is a strong relationship between the level of education of parents and

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 2.15

Distribution of children by poverty situation (World Bank) given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	Poverty situation (World Bank)							
	PNAD 1996				PNAD 2014			
	Extreme poverty	Poverty	Out of poverty	Total	Extreme poverty	Poverty	Out of poverty	Total
No schooling (less than primary education)	19,8%	34,8%	45,3%	100,0%	5,9%	22,7%	71,4%	100,0%
Incomplete Elementary or Junior High School levels	7,9%	21,7%	70,4%	100,0%	2,2%	10,7%	87,1%	100,0%
Complete Elementary and Junior High School or incomplete High School level	2,9%	9,4%	87,7%	100,0%	2,1%	7,8%	90,1%	100,0%
Complete High School level or incomplete Undergraduate level	1,4%	5,5%	93,1%	100,0%	1,1%	5,3%	93,6%	100,0%
Holds a bachelor's degree or higher	1,1%	3,0%	95,9%	100,0%	0,8%%	1,8%	97,4%	100,0%
Total	12,3%	25,8%	62,0%	100,0%	3,4%	14,1%	82,4%	100,0%

the possibility of poverty on the part of their children: the higher the level of education of the parents, the lower the probability of poverty for their children. This is explicit when comparing the probabilities described for children of uneducated parents and the probabilities for children of parents with a college degree or more, which were 4.1% in 1996 and 2.6% in 2014.

Source
IMDS based on PNAD 1996 and 2014 microdata.

To return to the summary

PART THREE

3 Housing conditions, access to basic sanitation, children's household structure and composition, and fathers' level of schooling

CHAPTER HIGHLIGHTS:

- The probability that the population analyzed does not have adequate sanitation in the household is 34.9%, with more than half of the children of unschooled fathers (50.7%) facing the problem, while the probability for descendants of fathers with at least a bachelor's degree is 11.5%. These results indicate that the fathers' level of schooling is directly related to access to adequate sanitation.

- The higher the level of schooling of the father, the greater the probability of living in a household with water supplied through the general distribution network - 77.4% for children of fathers with no schooling and 97.2% for children of fathers with an undergraduate or graduate degree.

- This is an aspect that can be influenced by the territoriality of individuals: while for the total population analyzed, water supplied through the general distribution network is 85.6%, in rural areas it is 30.2%. In the Midwest, Southeast and Southern regions it is more than 85.0%, but in the Northeast and Northern regions it is 78.8% and 59.5%, respectively.

- In 10.5% of households there is no direct or indirect garbage collection, but this probability decreases as the fathers' level of schooling increases. The lack of access to garbage collection has reduced over time - in 1996 it was 25.3%.

- There is a strong relationship between the fathers' level of schooling and access to sanitary sewage via a sewage or rainwater collection system. Among children of unschooled fathers, the probability that they live in households with another type of sanitary sewage system - direct to the river, lake or sea, rudimentary cesspool, ditch, and other form - is 32.1%, while for children of fathers who hold bachelors' degrees or higher, it is 2.8%.

- Indicators related to sanitation services are strongly influenced by the territoriality of the children: in rural areas they are considerably less likely to have water supplied by a general network, direct garbage collection, and sanitary sewage disposal by a sewage or rainwater collection network.

- Ownership of a sanitary installation in the household increased over time and became widespread, reaching 97.9% in 2014.

To return to the summary

In 1996, the lack of sanitary installations was 9.0%, with a probability of occurrence mainly among children of fathers with no schooling, or with incomplete Elementary or Junior High School levels.

- Among children of unschooled fathers, the probability is 51.1% that they do not have a water filter, while this same probability, for children whose fathers hold bachelors' degrees or higher, is 29.4%.

- The probability of living in households with a density of less than two residents per bedroom is higher among children of more educated fathers - 73.6% for children whose fathers hold a bachelor's degree or higher, and 53.4% for children of fathers with no schooling.

- There is an inverse relationship between the probability of people living in their own (paid) property and their fathers' level of schooling. This probability decreases as the fathers' level of schooling increases: 73.8% for children of unschooled fathers, and 68.3% for children whose fathers have a bachelor's degree or higher.

- The counterpart of children of unschooled fathers having, proportionally, more property of their own or living in transferred homes, is a lower percentage than that of people living in rented property. In fact, the difference between the probability of paying rent between a child of a father who has at least a bachelor's degree and a child of an unschooled father was 7.2 percentage points (21.0% against 13.8%).

- Regarding the expenditure of part of the household income on rent, between 1996 and 2014, there was a reduction in the probability of commitment of 30% or more for rent - it went from 33.2% to 24.8%.

To return to the summary

The previous sections presented the relationship between the fathers' level of schooling and their children's level of schooling, the children's results in the labor market and their individual or household income. Once the indicators on these themes have been summarized, this section will analyze the relationship between the fathers' level of schooling and access to sanitation services, density of households for children and housing conditions.

The first and second subsections will be based on the elements presented in the panel *Intergenerational Mobility: PNAD 2014*, exposing the most recent information captured by the indicators of intergenerational mobility presented by IMDS. The third subsection will be responsible for presenting comparisons between the results from the 1996 and 2014 PNADs, based on the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*[23].

3.1 Relationship between the fathers' level of schooling and the children's habitability

Initially, two fundamental characteristics that define the habitability of the household will be analyzed: sanitation conditions and the density of residents in the household.

From the indicator *adequate basic sanitation in the household*, it is possible to find the probability, given the level of schooling of the father, of the person simultaneously accessing three sanitation services: water supply through the general distribution network, garbage collected directly or indirectly and sanitary sewage through a collection or rainwater network[24].

Considering the population analyzed here, the probability is that 34.9% do not have adequate sanitation in the household, with more than half of the children of unschooled fathers (50.7%) facing the problem, while the probability for descendants of fathers holding at least a bachelor's degree is 11.5%. These results indicate that the fathers' level of schooling is directly related to access to

[23] The results will show differences for the year 2014 between the panels due to the considered sample. In addition to the difference between the age groups captured, being 25 to 65 years of age in the panel *Intergenerational Mobility: PNAD 2014*, and 25 to 64 years of age in the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*. For compatibility and possibility of comparison with 1996, special treatment was given to the 2014 sample: only information referring to the Socio-Occupational Mobility Supplement for respondents with a condition in the household of a reference person or spouse was considered.

[24] According to IBGE (2017).

adequate sanitation: the higher the fathers' level of schooling, the greater the chances that their children will access adequate basic sanitation.

If considering skin color or race, it is noted that the situation is worse for Blacks, among whom, in total, the chances of lacking in this area are 43.2%, and 55.8% for children of unschooled fathers, and 18.4% for children of fathers who hold at least a bachelor's degree. Whereas, among Whites, the chances of being deprived, in total, are 27.6%, and the odds for children of unschooled fathers and of those who hold a bachelor's degree or higher are 42.3% and 10.3%, respectively.

In urban areas, this pattern is also verified: the probability of a lack in this aspect reduces with the increase of the fathers' level of schooling - for children of unschooled fathers, the probability of lacking is 38.6% against 10.6% for children of fathers who hold a bachelor's degree or higher. In rural areas, the probability of lacking in this area is 94.2% for the reference population.

Among the regions of Brazil, the Northern region presents the worst scenario, with a probability that 80.5% of people do not have adequate access to sanitation, compared to 13.5% for the population in the Southeast, a region with the least shortage.

Regarding the type of household water supply, in general, the probability of access to supply through the general distribution network is high, but it still indicates a relationship with the fathers' level of schooling: the higher the father's level of schooling, the greater the probability of living in a household

TABLE 3.1

Distribution of children by situation of adequate basic sanitation in the household, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	ADEQUATE BASIC SANITATION IN HOUSEHOLD		
	With adequate sanitation	Without adequate sanitation	Total
No schooling (less than primary education)	49,3%	50,7%	100%
Incomplete Elementary or Junior High School levels	67,8%	32,2%	100%
Complete Elementary and Junior High School levels	79,5%	20,5%	100%
Incomplete High School level	72,2%	27,8%	100%
Complete High School level or incomplete Undergraduate level	81,9%	18,1%	100%
Holds a bachelor's degree or higher	88,5%	11,5%	100%
Total	65,1%	34,9%	100%

Source
IMDS based on PNAD 2014 microdata.

TABLE 3.2

Distribution of children by situation of water supply in the household, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	TYPE OF HOUSEHOLD WATER SUPPLY			
	General distribution network	Well or spring	Other type	Total
No schooling (less than primary education)	77,4%	19,3%	3,4%	100%
Incomplete Elementary or Junior High School levels	87,5%	7,0%	0,5%	100%
Complete Elementary and Junior High School levels	92,5%	8,0%	1,2%	100%
Incomplete High School level	90,8%	5,0%	0,3%	100%
Complete High School level or incomplete Undergraduate level	94,7%	2,8%	0,3%	100%
Holds a bachelor's degree or higher	97,2%	2,8%	0,1%	100%
Total	85,6%	12,8%	1,5%	100%

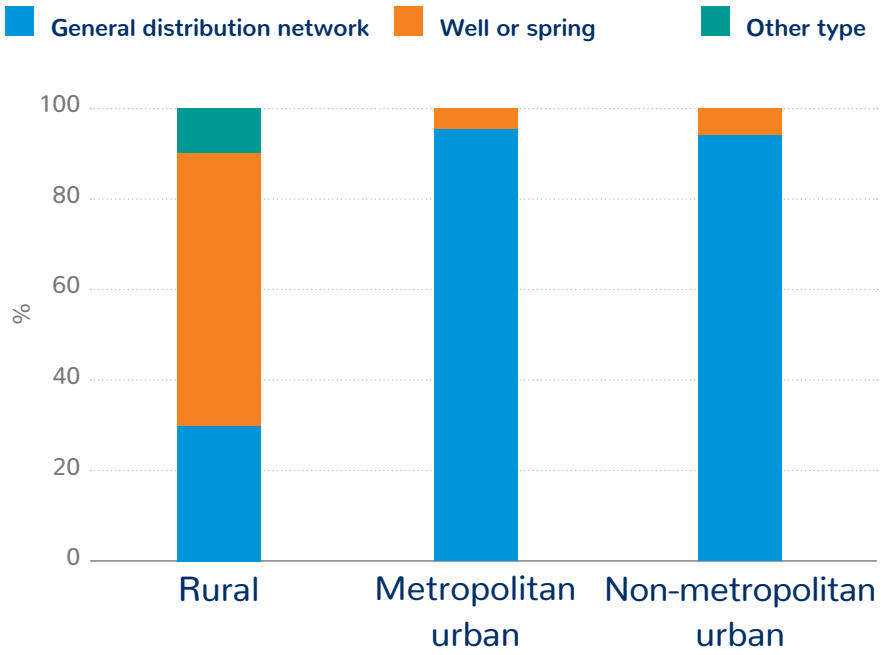
Source
IMDS based on PNAD 2014 microdata.

with water supply through the general distribution network - 77.4% for children of unschooled fathers and 97.2% for children of fathers with a bachelor's degree.

However, the difference in access is strongly influenced by the territorial locations of the children (Graph 3.1). People living in rural areas have the lowest probability of accessing water supply through the general distribution

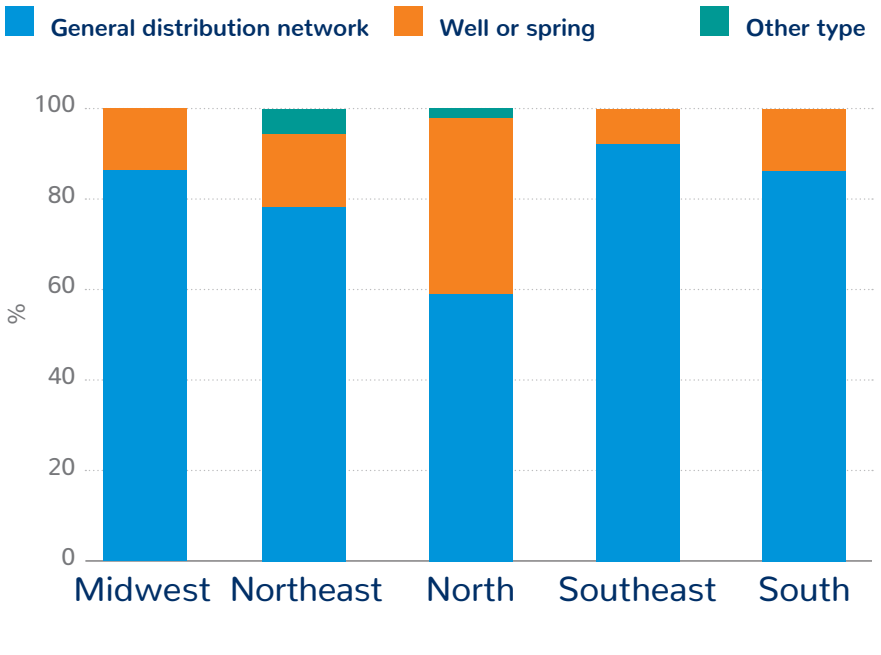
GRAPH 3.1

Distribution of children by situation of water supply in the household and area: Brazil, 2014



GRAPH 3.2

Distribution of children by situation of water supply in the household and greater region: Brazil, 2014



network (30.2%), as well as residents in the Northern and Northeastern regions – 59.5% and 78.8%, respectively. In the Midwestern, Southeastern and Southern regions, the probabilities are greater than 85.0% (Graph 3.2).

Data on *destination of household waste* show that 10.1% of households do not have direct or indirect garbage collection and the probability of this occurrence decreases in relation to the fathers' level of schooling. For children of unschooled fathers, the likelihood that garbage is not collected directly or indirectly – but is thrown into a river, lake, or sea; thrown in a vacant lot or backyard; burned or buried on the property; or other destination – is 18.8%. For children of fathers with incomplete Elementary or Junior High School levels

Source
IMDS based on PNAD 2014 microdata.

– the next level of schooling on the scale – this probability is 7.8%, and for children of fathers with a bachelor's degree or higher, it is 0.7%.

An important point to note is that this indicator is practically stagnant for the different cohorts studied here and is headed by the rural area, where the probability that waste disposal is not collected direct or indirectly is 65.2% – and for urban areas, metropolitan or non-metropolitan, it is 1.1%.

In rural areas, 71.7% of children of unschooled fathers have a strong likelihood of not having direct or indirect household waste disposal, while chances for residents of urban areas are 2.1%.

The regional disparity related to this indicator is also verified. It can be observed that, in the Northeast, there is a probability that 31.5% of residents, children of unschooled fathers, do not have access to waste disposal services. The region is followed by the North, where the probability is 28.8%, while in the Southeast, the chances of children of unschooled fathers not having access to waste disposal services is 7.8%.

Another dimension of inequality is racial – while for Whites, the probability that children of unschooled fathers do not have direct or indirect waste disposal is 11.7%, among Blacks this probability practically doubles, being 22.7%. Although this demographic group also presents a decreasing pattern for this type of waste disposal as per the increa-

TABLE 3.3

Distribution of children by situation of destination of household waste, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	DESTINATION OF HOUSEHOLD WASTE			
	Collected directly	Collected indirectly	Other way	Total
No schooling (less than primary education)	75,3%	5,9%	18,8%	100%
Incomplete Elementary or Junior High School levels	86,6%	5,7%	7,8%	100%
Complete Elementary and Junior High School levels	91,3%	5,9%	2,8%	100%
Incomplete High School level	90,0%	7,7%	2,3%	100%
Complete High School level or incomplete Undergraduate level	91,5%	7,1%	1,4%	100%
Holds a bachelor's degree or higher	91,6%	7,7%	0,7%	100%
Total	83,8%	6,0%	10,1%	100%

Source
IMDS based on PNAD 2014 microdata.

TABLE 3.4

Distribution of children by type of household sewage system, given their fathers' level of schooling: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	TYPE OF HOUSEHOLD SEWAGE SYSTEM				
	Collection network	Septic tank connected to the collection network	Septic tank not connected to the collection network	Other type	Total
No schooling (less than primary education)	47,2%	4,4%	16,4%	32,1%	100%
Incomplete Elementary or Junior High School levels	62,9%	6,9%	13,0%	17,1%	100%
Complete Elementary and Junior High School levels	74,2%	7,4%	9,4%	9,1%	100%
Incomplete High School level	67,2%	7,6%	14,6%	10,3%	100%
Complete High School level or incomplete Undergraduate level	77,1%	6,5%	10,0%	6,4%	100%
Holds a bachelor's degree or higher	85,1%	4,5%	7,6%	2,8%	100%
Total	61,2%	5,9%	13,3%	19,3%	100%

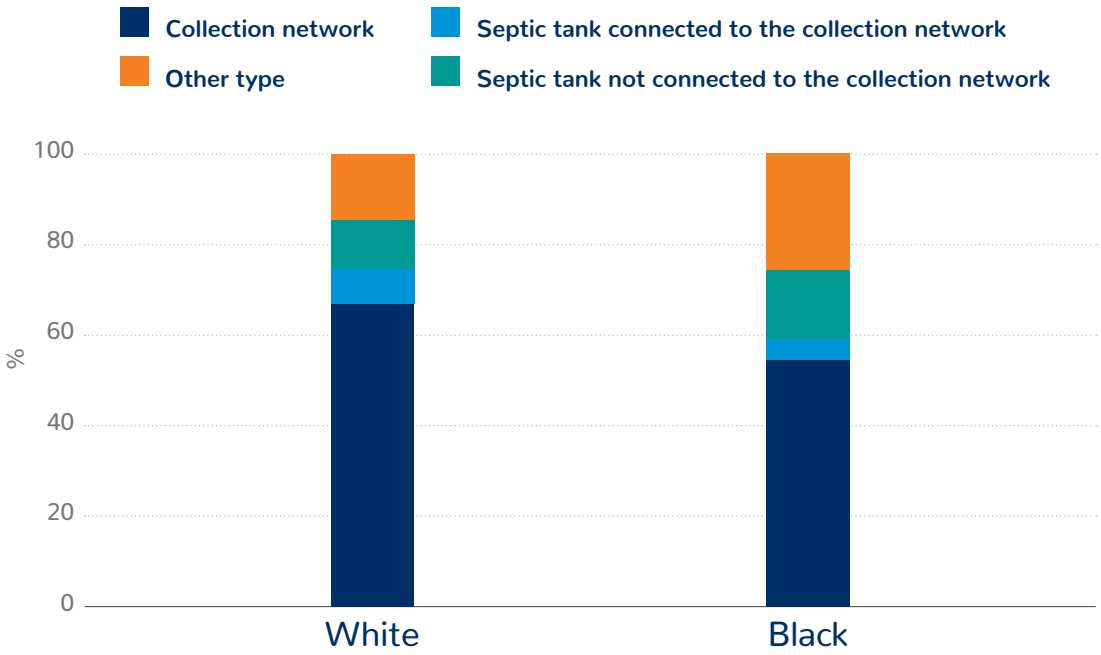
Source
IMDS based on PNAD 2014 microdata.

se in the fathers' level of schooling, access to the service is less widespread for Blacks for all levels of schooling of the fathers.

Regarding the type of household sewage system, it is possible to notice a strong relationship between the level of schooling of fathers and access to sewage systems via the sewage or rainwater collection network. This becomes clear when seeing that, among children of unschooled fathers, the probability that they live in households with another type of sewage disposal - thrown in the river, lake, or sea, rudimentary cesspool, ditch or other way – is 32.1%, while for children of fathers who hold a bachelor's degree or higher, it is 2.8%.

GRAPH 3.3

Distribution of children by type of sewage system in the household and skin color or race: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

The type of access to this service is also strongly influenced by the territoriality of the children's residence: in rural areas, only 5.8% of the reference population has access to household sewage disposal through a collection network, and 63.2% have access to another type of household sewage disposal. With regard to the regions, the greatest access to collection network sewerage disposal is found in the Southeast (86.6%), a probability almost twice as high as that found in the Midwest (45.8%), which is followed by the South (41.7%), Northeast (40.8%) and North (15.2%).

For Black people, the probability of having a sewage disposal system of another type is practically double compared to that of White people: 26.0% compared to 13.8% (Graph 3.3).

With regard to having a water filter at home, the data indicate that, among children of unschooled fathers, the probability is that 51.1% do not have a water filter, while the same probability, for children of fathers with a bachelor's degree or higher, is 29.4%. This pattern is observable for cuttings by sex and skin color or race, with little variation in probability.

Based on cuttings by skin color or race, considering the Black population, the probability of not having a water filter among children of unschooled fathers is 52.3%, and for children of fathers with a bachelor's degree or higher, this probability is 35.0%. For the most recent cohort - born between 1980 and 1989 - of children of unschooled fathers, the probability of lacking in this item is 56.9%

As for the indicator *has sanitary installation*

TABLE 3.5

Distribution of children by availability of a water filter in the household, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HAS A WATER FILTER AT HOME		
	Has a water filter	Has no water filter	Total
No schooling (less than primary education)	48,9%	51,1%	100%
Incomplete Elementary or Junior High School levels	53,7%	46,3%	100%
Complete Elementary and Junior High School levels	60,0%	40,0%	100%
Incomplete High School level	57,1%	42,9%	100%
Complete High School level or incomplete Undergraduate level	64,0%	36,0%	100%
Holds a bachelor's degree or higher	70,6%	29,4%	100%
Total	54,5%	45,5%	100%

Source
IMDS based on PNAD 2014 microdata.

in the household, most of the population does not have a shortage in this regard, but amongst those who do, the highest probability is among children of unschooled fathers, 4.4%. Considering only children of unschooled fathers, this probability is higher for Blacks (6.0%), residing in the Northeast (9.0%) and North (8.0%) and, mainly, in rural areas, in which 15, 5% of the children in this cutting do not have such infrastructure.

When looking at the indicator *number of residents per bedroom*, the highest probability, regardless of the level of schooling of the fathers, is that the child lives in households with less than two residents per bedroom. Specifically, the probability of living in households with fewer than two residents per bedroom increases with the fathers' level of schooling. For households with three or more residents per bedroom, the direction of increased probability is inverse to the increase in the fathers' level of schooling - and the same occurs for the density between 2 and 3 residents per bedroom, whose probability decreases with schooling (Table 3.8).

The probability that children of fathers with bachelors' degrees live in households with three or more residents per bedroom is 2.5%, less than a third of the children of fathers with no schooling, 9.4%. This pattern is also seen for cuttings by sex and skin color or race. However, the probability that Whites, in general, live in households with three or more residents per bedroom is 5.6%, while for Blacks it is 10.4%.

TABLE 3.6

Distribution of children by situation of having sanitary installation in the household of residence, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HAS SANITARY INSTALLATION IN THE HOUSEHOLD	
	Has sanitary installation	Has no sanitary installation
No schooling (less than primary education)	95,6%	4,4%
Incomplete Elementary or Junior High School levels	99,3%	0,7%
Complete Elementary and Junior High School levels	99,8%	0,2%
Incomplete High School level	99,3%	0,7%
Complete High School level or incomplete Undergraduate level	99,7%	0,3%
Holds a bachelor's degree or higher	99,8%	0,2%
Total	98,1%	1,9%

TABLE 3.7

Distribution of children by number of residents per bedroom in the household, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	NUMBER OF RESIDENTS PER BEDROOM			
	Less than two residents per bedroom	Two or less than three residents per bedroom	Three or more residents per bedroom	Total
No schooling (less than primary education)	53,4%	37,1%	9,4%	100%
Incomplete Elementary or Junior High School levels	58,5%	33,4%	8,1%	100%
Complete Elementary and Junior High School levels	58,2%	34,6%	7,3%	100%
Incomplete High School level	60,1%	28,4%	11,5%	100%
Complete High School level or incomplete Undergraduate level	63,5%	31,2%	5,3%	100%
Holds a bachelor's degree or higher	73,6%	23,9%	2,5%	100%
Total	58,0%	34,0%	7,9%	100%

Source
IMDS based on PNAD 2014 microdata.

Source
IMDS based on PNAD 2014 microdata.

GRAPH 3.4

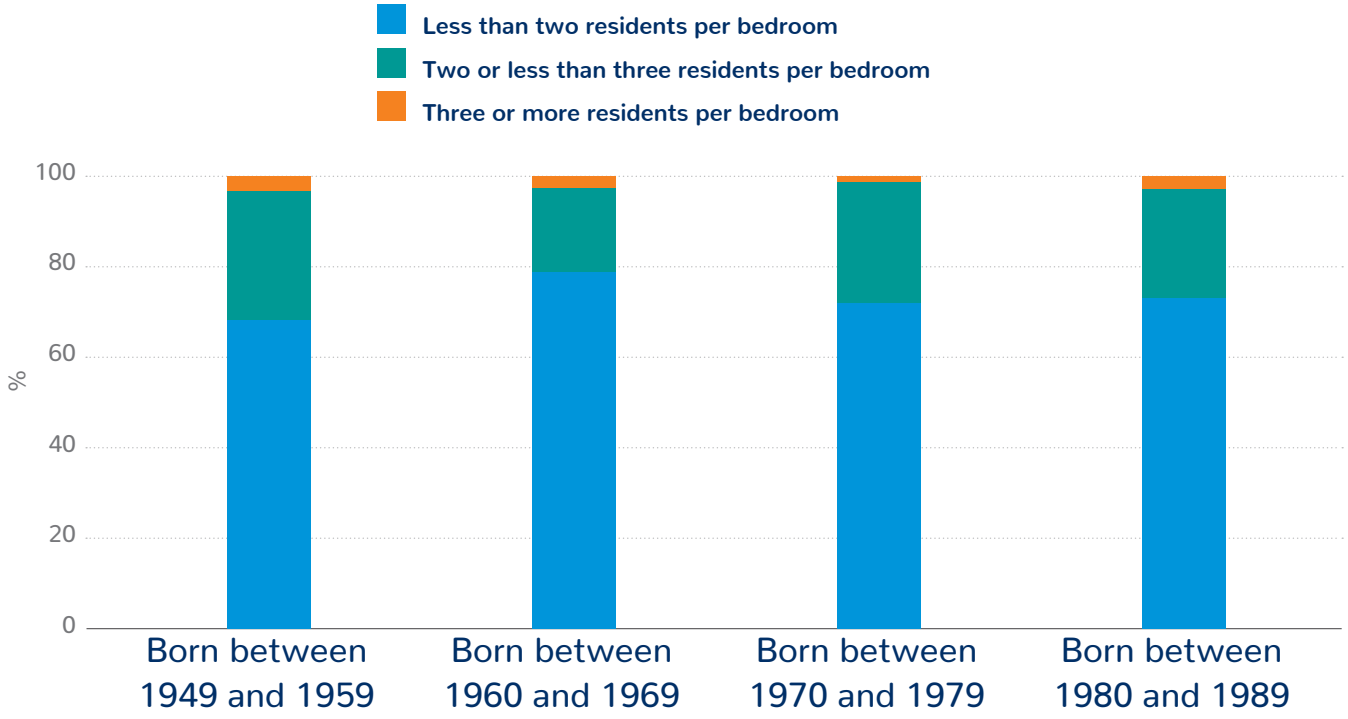
Distribution of children of unschooled fathers by number of residents per bedroom in the household and birth cohort: Brazil, 2014

The analysis by cohort shows, for those born more recently, an increase in the proportion of children of unschooled fathers living in households with more than three residents per bedroom (see orange band in Graph 3.4). The difference in this proportion also increases (more than three residents per bedroom) between children of unschooled fathers and fathers who hold a bachelor's degree: for the most recent cohort, those born between 1980 and 1989, the difference is an 18.2% probability for children of unschooled fathers and 3.0% for children of fathers with bachelors' degrees, while for the cohort of children born between 1949 and 1959, there is no difference (3.4% for children of unschooled fathers, and 3.5 % for children of fathers with a university degree) – see the comparison of

Source
IMDS based on PNAD 2014 microdata.

GRAPH 3.5

Distribution of children of fathers who hold a bachelor's degree or higher by number of residents per bedroom in the household of residence and birth cohort: Brazil, 2014



the orange bands in Graphs 3.4 and 3.5. Furthermore, among children of fathers with a university degree, this probability varies little between the different cohorts (Chart 3.5).

In general, the habitability of children's homes is related to the fathers' level of schooling. For those indicators where there is no continuous pattern in the relationship, it is still possible to capture relevant analyses based on the comparison between extremes, such as from the results of children of unschooled fathers versus the results of children of fathers with a bachelor's degree or higher.

3.2 Relationship between the fathers' level of schooling and the ways their children have access to housing

After evaluating habitability, this subsection will present two indicators for the analysis of the relationship of household ownership, by children, given the fathers' level of schooling.

Based on the indicator *condition of household occupation*, there is a slight inverse relationship between the probability of people living in their own (paid) property and their fathers' level of schooling. This probability decreases as the fathers' level of schooling increases: 73.8% for children of unschooled fathers and 68.3% for children of fathers holding a bachelor's degree or higher.

Considering owned properties (still paying), the conditional probabilities are 4.3% for children of unschooled fathers and 7.8% for children of fathers holding a bachelor's degree or higher. In other words, the relationship with the fathers' level of schooling is presented in an inverse way from that verified for own properties, already paid for: there is a tendency that the higher the fathers' level of schooling, the greater the probability that the child is living in their own property, and still paying.

In terms of the unconditional distribution, there is a strong age component in this variable. The data show that, among people between 25 and 34 years of age, in 2014, 62.6% had their own properties (already paid for), compared to 82.2% for people born between 1949 and 1959.

The difference on occupation of transferred properties complements the panorama. PNAD subdivides the assigned households into those transferred by the employer of one of the residents or transferred in another way, by an institution or non-resident (relative or not). In 2014, children of unschooled fathers living in transferred properties were 7.8%, compared to 2.9% for children of fathers with bachelors' degrees or higher.

The counterpart of children of unschooled fathers having, proportionally, more property of their own or living in transferred homes, is a lower percentage of people living in rented property: in fact, the difference between the probability of paying rent between a child of a father with at least a bachelor's degree and a

TABLE 3.8

Distribution of children by condition of household occupation, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	CONDITION OF HOUSEHOLD OCCUPATION					
	Own property, already paid	Own property, still paying	Rented property	Transferred property	Other condition	Total
No schooling (less than primary education)	73,8%	4,3%	13,8%	7,8%	0,4%	100%
Incomplete Elementary or Junior High School levels	71,1%	6,9%	15,5%	6,3%	0,3%	100%
Complete Elementary and Junior High School levels	68,7%	8,0%	17,9%	5,1%	0,3%	100%
Incomplete High School level	65,8%	6,7%	20,3%	7,2%	-	100%
Complete High School level or incomplete Undergraduate level	64,5%	10,1%	21,1%	4,1%	0,2%	100%
Holds a bachelor's degree or higher	68,3%	7,8%	21,0%	2,9%	-	100%
Total	71,0%	6,4%	16,0%	6,3%	0,3%	100%

Source
IMDS based on PNAD 2014 microdata.

child of an unschooled father was 7.2 percentage points (21.0% against 13.8%).

Although the probability of living in rented property is lower for children of unschooled fathers, the *share of household income allocated to rent* indicates a relevant weight of rent on the household income for those living in this condition. It is considered as an indicator of vulnerability, as defined by IBGE (2020)[25], for excessive burden with rent being the commitment of income with rent equal to or greater than 30%. The probability of this occurrence is 25.5% for children of unschooled fathers and 22.3% for children of fathers with a bachelor's degree or higher. Despite being higher for children of unschooled fathers, this probability does not seem to vary much with fathers' schooling.

[25] See: https://biblioteca.ibge.gov.br/visualizacao/livros/liv101760.pdf

Among the interviewees, the probability of at least 30% of household income being committed to rent was 23.7%, with 25.6% for women and 21.6% for men, with a difference in relation to the average of just two percentage points. As to the greater regions, the highest probability of having 30% or more of their income committed to rent is in the Southeast (26.6%), followed by the Midwest (24.2%).

When only residents of metropolitan urban areas were selected, there is a negative relationship between the father's level of schooling and the fraction of income committed to rent as more than 30%: probability of 34.3% for children of unschooled fathers and 28.0% for children of fathers with bachelors' degrees or higher.

It is possible to note, therefore, a specific relationship between the condition on occupation in the household and the fathers' level of schooling. On the other hand, this relationship is not as noticeable in the analysis of the indicator of the *share of income allocated to rent* based on the vulnerability criterion (commitment of 30% or more of household income to rent). Despite showing differences between vulnerability at the two extremes of the fathers' levels of schooling, there is no consistent pattern of variation. It is worth emphasizing the increased probability, according to the increase in the fathers' level of schooling, in the category of commitment of less than 10% of household income to rent, indicating the relationship with the father's level of schooling in a well-defined way.

TABLE 3.9

Distribution of children by share of household income allocated to renting a residence, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	SHARE OF HOUSEHOLD INCOME DESTINED FOR RENT			
	Less than 10%	10% to less than 30%	30% or more	Total
No schooling (less than primary education)	14,3%	60,2%	25,5%	100%
Incomplete Elementary or Junior High School levels	16,0%	61,6%	22,3%	100%
Complete Elementary and Junior High School levels	15,3%	59,5%	25,2%	100%
Incomplete High School level	18,1%	65,4%	16,5%	100%
Complete High School level or incomplete Undergraduate level	20,4%	55,5%	24,1%	100%
Holds a bachelor's degree or higher	29,5%	48,2%	22,36%	100%
Total	17,0%	59,3%	23,7%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

3.3. Results compared between 1996 and 2014

The main interest of the analysis presented by this report is the association between the socioeconomic indicators of children and the level of schooling of fathers. For this, the most recent information that enables the study of intergenerational mobility in Brazil is used – the PNAD 2014, with its Supplement for Socio-Occupational Mobility.

However, other analyses can be made by comparing the results of two similar surveys, the 1996 PNAD – which also has a Supplement on Social Mobility – and the 2014 PNAD, such as whether there have been changes in the profile of the relationship between the fathers' level of schooling and children's socioeconomic outcomes at different moments.

As stated, from the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*, it is possible to find these comparative results for people 25 to 64 years of age, according to the age on the reference day of the surveys. For this purpose, the 2014 PNAD sample was treated and only reference persons and spouses responding to the supplement were considered, allowing for compatibility for comparison, which justifies variations in the 2014 results presented in this subsection and in the previous subsections.

The indicator of *having a sanitary installation in the household* indicates that there was a reduction in the probability of a lack of sanitary installation in the household for children of fathers with no schooling and with incomplete Elementary or Junior High School levels. People 25 to 64 years of age in 1996, children of unschooled fathers, had a 16.7% chance of not having sanitary facilities in their households, while people 25 to 64 years of age in 2014, children of unschooled fathers, had a 4.7% chance. For children of fathers who did not complete Elementary or Junior High School levels, the probability of being deprived of such went from 4.3% to 0.8% (Table 3.10). Thus, there is a reduction in the relationship between the low educational level of fathers and the lack in facilities for their offspring, when adults, in this regard.

Regarding waste disposal, the comparison of results shows that people 25 to 64 years of age in 2014 had, in general, better results than this same age bracket in 1996, and this positive change in the probability of access to household waste disposal is mainly among children of fathers with no schooling

TABLE 3.10

Distribution of children by presence of a sanitary installation in the household, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	HAS SANITARY INSTALLATION IN THE HOUSEHOLD					
	PNAD 1996			PNAD 2014		
	Has no sanitary installation	Has sanitary installation	Total	Has no sanitary installation	Has sanitary installation	Total
No schooling (less than primary education)	16,7%	83,3%	100%	4,7%	95,3%	100%
Incomplete Elementary or Junior High School levels	4,3%	95,7%	100%	0,8%	99,2%	100%
Complete Elementary and Junior High School or incomplete High School level	0,8%	99,2%	100%	0,3%	99,7%	100%
Complete High School level or incomplete Undergraduate level	0,2%	99,8%	100%	0,2%	99,8%	100%
Holds a bachelor's degree or higher	0,1%	99,9%	100%	0,3%	99,7%	100%
Total	9,0%	91,0%	100%	2,1%	97,9%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

or with incomplete Elementary or Junior High School levels.

In general, there was a general reduction in the lack of access to sanitation services, with special attention to the reduction in the relationship between the fathers' low level of schooling and their offspring's lack of access as adults.

Still, from the comparison between the results of 1996 and 2014, it is worthwhile mentioning that, in addition to the relevant relationship between the fathers' level of schooling and the socioeconomic results of their children, other determinants influence the results of these offspring, as seen by the reductions in lack of access regardless of the fathers' level of schooling.

TABLE 3.11

Distribution of children by destination of household waste, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	DESTINATION OF HOUSEHOLD WASTE							
	PNAD 1996				PNAD 2014			
	Other way	Collected indirectly	Collected directly	Total	Other way	Collected indirectly	Collected directly	Total
No schooling (less than primary education)	38,0%	6,7%	55,2%	100%	18,8%	6,2%	75,0%	100%
Incomplete Elementary or Junior High School levels	18,8%	6,8%	74,3%	100%	7,6%	5,9%	86,5%	100%
Complete Elementary and Junior High School or incomplete High School level	5,0%	9,3%	85,6%	100%	2,7%	6,1%	91,2%	100%
Complete High School level or incomplete Undergraduate level	3,2%	9,1%	87,7%	100%	1,3%	7,8%	90,9%	100%
Holds a bachelor's degree or higher	2,2%	6,9%	90,8%	100%	0,7%	7,5%	91,7%	100%
Total	25,3%	7,0%	67,7%	100%	10,5%	6,3%	83,2%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

Considering the *condition of household occupation* indicator, the decreasing pattern of the probability of the offspring living in a household of their own (already paid for), given the father's level of schooling, is similar in 1996 and 2014.

In 1996, the condition of transferred property was more relevant than in 2014: in the former year, children of unschooled fathers had a 14.1% probability of living in transferred property, compared to 7.0% among children of fathers with a bachelor's degree or higher. In 2014, these odds were 8.4% and 3.5%, in that order.

The counterpart of children of unschooled fathers having, proportionally, more properties of their own or living in transferred homes is that there is a lower percentage of people li-

TABLE 3.12

Distribution of children by condition on occupation of the household of residence, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	CONDITION OF HOUSEHOLD OCCUPATION											
	PNAD 1996						PNAD 2014					
	Other condition	Transferred property	Rented property	Own property, still paying	Own property, already paid	Total	Other condition	Transferred property	Rented property	Own property, still paying	Own property, already paid	Total
No schooling (less than primary education)	0,6%	14,1%	9,9%	4,5%	70,9%	100%	0,5%	8,4%	14,8%	4,7%	71,6%	100%
Incomplete Elementary or Junior High School levels	0,4%	10,7%	14,3%	8,3%	66,3%	100%	0,2%	7,0%	17,1%	7,7%	67,9%	100%
Complete Elementary and Junior High School or incomplete High School level	0,1%	7,5%	20,5%	14,4%	57,5%	100%	0,3%	6,2%	21,0%	9,9%	62,7%	100%
Complete High School level or incomplete Undergraduate level	0,2%	5,9%	21,4%	15,7%	56,8%	100%	0,0%	5,5%	25,7%	12,7%	56,1%	100%
Holds a bachelor's degree or higher	0,1%	7,0%	21,5%	12,6%	58,8%	100%	-	3,5%	24,4%	10,0%	62,0%	100%
Total	0,4%	11,8%	13,1%	7,3%	67,4%	100%	0,3%	7,2%	17,6%	7,3%	67,6%	100%

ving in rented property: in fact, in 1996, the difference in the probability of paying rent between a child of an educated father and a child of an unschooled father was almost 12 percentage points (21.5% versus 9.9%), and in 2014 almost 10 percentage points (24.4% versus 14.8%).

Regarding the share of household income allocated to rent, there is a substantial change in relation to what occurred in 1996. The data indicate that, in that year, there was a greater inverse relationship between the level of schooling of fathers and the commitment of 30% or more of the income to rent. Children

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 3.13

Distribution of children by portion of household income destined for the rent of the household, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	SHARE OF HOUSEHOLD INCOME DESTINED FOR RENT							
	PNAD 1996				PNAD 2014			
	30% or more	10% to less than 30%	Less than 10%	Total	30% or more	10% a menos de 30%	Less than 10%	Total
No schooling (less than primary education)	35,9%	50,8%	13,4%	100%	26,3%	60,3%	13,4%	100%
Incomplete Elementary or Junior High School levels	33,7%	53,1%	13,2%	100%	23,2%	62,0%	14,8%	100%
Complete Elementary and Junior High School or incomplete High School level	27,5%	57,1%	15,5%	100%	26,2%	59,4%	14,5%	100%
Complete High School level or incomplete Undergraduate level	25,4%	60,6%	14,0%	100%	25,3%	56,7%	18,0%	100%
Holds a bachelor's degree or higher	23,9%	59,1%	16,9%	100%	25,0%	50,5%	24,4%	100%
Total	33,2%	53,2%	13,6%	100%	24,8%	59,8%	15,4%	100%

of unschooled fathers had a probability of 35.9% of being in this condition, while children of fathers with a bachelor's degree or higher had a probability of 23.9% – a difference of 12 pp. In 2014, the probability was 26.3% and 25.0%, respectively – a difference of 1.3 pp.

With all the considerations that have been made and in order to add more elements to the study of intergenerational mobility in Brazil, the next step will be to analyze the consumption of durable goods and access to telecommunication services, given the fathers' level of schooling.

Source
IMDS based on PNAD 1996 and 2014 microdata.

To return to the summary

PART FOUR

4 Consumption of durable goods, access to telecommunication services and the fathers' level of schooling

CHAPTER HIGHLIGHTS:

- There is a remarkable relationship between the lack of Internet access in the household and the father's low level of schooling - or lack of it. On the other hand, the higher the level of schooling of fathers, the greater the access to broadband connection. Among children of unschooled fathers, the probability that they did not have access to the Internet is 55.0% and the probability that they had a broadband connection is 29.6%. For children of fathers with a bachelor's degree or higher, these probabilities are 4.9% and 89.4%.

- Among those who had access to the Internet in the household, children of fathers who had a bachelor's degree or higher had a 91.9% probability of accessing via a microcomputer, television, or tablet, while this probability was 32.7% for children of unschooled fathers, which demonstrates a direct relationship between higher levels of schooling and access to the Internet via these devices.

- The highest probability of owning a microcomputer or tablet is among children of more educated fathers, reaching 55.7% for children of fathers with a bachelor's degree, compared to 8.0% for children of fathers with no schooling.

- The lack of access to telecommunications in the household is also strongly associated with the father's education: 7.9% of children of unschooled fathers live in households where there is no landline and no resident has a cell phone, while practically all children of fathers with a bachelor's degree or higher own a telephone at home.

- Among children of unschooled fathers, the probability of not having a washing machine is 54.3%, while for children of fathers with a bachelor's degree or higher it is only 6.5% - that is, among these children, the probability of owning a washing machine in the household is 93.5%.

- In 1996, the probability of a lack of a refrigerator or freezer was 17.9% and, the lower the level of schooling of the father, the greater the probability of their children not having a refrigerator or freezer - 30.8% among children of fathers with no schooling compared to 0.9% among children of fathers with a bachelor's degree. In 2014, the probability of such a lack for the population analyzed was 1.6%.

To return to the summary

- Owning only a car for exclusive use is strongly associated with the fathers' level of schooling, in a positive way: the higher the fathers' level of schooling, the greater the probability that their children will own only a car, reaching 74.8% for children of fathers with a bachelor's degree. Conversely: the lower the level of schooling of the fathers, the greater the probability of absence of both a car and of a motorcycle - 41.1% for children of unschooled fathers and 10.6% for children of fathers with a bachelor's degree or higher.

Among the socioeconomic indicators provided by IMDS are those related to access to technology and durable goods and services. Both themes are related to the income of individuals and, as we saw in section 2, the income of children, as adults, is highly associated with the level of schooling of their fathers. To a certain extent, the idea is to analyze what the income of individuals buys in terms of goods and services.

Thus, following the proposed analysis of this synopsis of indicators, the aim is to verify the relationship, if any, between the fathers' level of schooling and the socioeconomic results of the children regarding the themes in question.

The first subsection is based on data presented in the *Intergenerational Mobility: PNAD 2014* panel, exposing the most recent information captured by the intergenerational mobility indicators presented by IMDS. The second subsection presents comparisons between the results of the 1996 and 2014 PNADs and is associated with the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*[26].

[26] The results will show differences for the year 2014 between the panels due to the considered sample. In addition to the difference between the age groups captured (25 to 65 years of age for 2014 and 25 to 64 years of age in the panel *Intergenerational Mobility: a comparison of the results 1996 and 2014*), for compatibility and possibility of comparison with 1996, special treatment was given to the 2014 sample. Only information referring to the Socio-Occupational Mobility Supplement for respondents with status in the household of a reference person or spouse was considered.

To return to the summary

4.1. Relationship between the fathers' level of schooling and their children's access to technology, services, and durable goods

The analysis is based on technology access indicators: the *type of Internet connection at home* and the *equipment used to access the Internet at home*. Regarding the first indicator, there is a remarkable relationship between the lack of Internet access in the household and the father's low level of schooling - or lack of it. On the other hand, the higher the level of schooling of fathers, the greater the access to broadband and more.

Among children of unschooled fathers, the probability that they have no access to the Internet is greater than 50% (55.0%) and the probability that they have broadband connection is 29.6%. For children of fathers with a bachelor's degree or higher, these odds are 4.9% and 89.4%. These relationships are consistent with changes in the fathers' level of schooling, as seen in Table 4.1.

From the racial cutting, one can see that the father's level of schooling and the children's results are strongly associated for both Blacks and Whites. For example, access to the Internet via broadband is 25.4% for Black or Mixed-race children of unschooled fathers, but 81.5% when their fathers have a bachelor's degree or higher.

However, the probabilities are quite distinct: among Blacks, children of unschooled fathers have a 58.4% probability of not gaining access to the Internet. If the cut is made up of Black men, the figure reaches 60.7%. Among Whites, children of unschooled fathers have a 49.0% probability of not gaining access to the Internet. For White women, the probability of lack of access among daughters of unschooled fathers is 47.6%. As seen in section 1, this is the highest schooled group among children of unschooled fathers, which may be associated with this difference in lack of access.

It is likely that the intergenerational transmission of **poverty in consumption** is associated with the same factors that explain the transmission of low schooling and income. In that regard, it is consistent with the data in sections 1 and 2 that for the same levels of schooling of the fathers, there is a lower pro-

Poverty in consumption
Poverty "in consumption" is a notion of poverty related to permanent income. Therefore, even if income suffers transitory shocks, access to durable consumer goods and services is relatively based on "average" income. This income is understood as that which is expected to be maintained at a certain level in the long term and, with this, consumption is smoothed over in periods of transitory income loss, maintaining a certain pattern.

TABLE 4.1

Distribution of children by type of household Internet connection, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	TYPE OF INTERNET CONNECTION AT HOME				
	Broadband	3G or 4G cell phone network signal	Dial-up connection by telephone line	No Internet access at home	Total
No schooling (less than primary education)	29,6%	14,9%	0.4%	55,0%	100%
Incomplete Elementary or Junior High School levels	52,0%	15,2%	0,7%	32,1%	100%
Complete Elementary and Junior High School levels	62,8%	14,8%	0,7%	21,8%	100%
Incomplete High School level	62,2%	15,2%	2,2%	20,4%	100%
Complete High School level or incomplete Undergraduate level	76,4%	12,4%	0,2%	11,1%	100%
Holds a bachelor's degree or higher	89,4%	5,5%	0,2%	4,9%	100%
Total	49,6%	14,3%	0,5%	35,6%	100%

Source
IMDS based on PNAD 2014 microdata.

bability of Internet access among Blacks than among Whites. Still, one can see that access is more precarious at the rate that faster connections, such as broadband, are more frequent among Whites (59.2%) than among Blacks (39.3%).

Among residents in the Northeast, 65.4% of children of unschooled fathers do not have access to the Internet, which may be related to residences in rural areas in the Northeast. It is noted that, in rural areas, access is considerably rarer than in urban areas – 75.7% of the population analyzed does not have ac-

TABLE 4.2

Distribution of children by type of equipment used to access the Internet at home, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	EQUIPMENT USED TO ACCESS THE INTERNET AT HOME			
	Personal computer, television or tablet	Cell phone or other device	No Internet access at home	Total
No schooling (less than primary education)	32,7%	12,3%	55,0%	100%
Incomplete Elementary or Junior High School levels	57,3%	10,7%	32,1%	100%
Complete Elementary and Junior High School levels	69,1%	9,1%	21,8%	100%
Incomplete High School level	68,2%	11,4%	20,4%	100%
Complete High School level or incomplete Undergraduate level	81,8%	7,2%	11,1%	100%
Holds a bachelor's degree or higher	91,9%	3,2%	4,9%	100%
Total	54,0%	10,4%	35,6%	100%

Source
IMDS based on PNAD 2014 microdata.

cess to the Internet, compared to 29.0%. In metropolitan urban areas, the probability of lack of access among children of unschooled fathers is 38.5% and 22.2% among the entire population analyzed. However, these interpretations require caution, as the sample in rural areas is much smaller, particularly for those with higher levels of schooling.

Among those who had access to the Internet in the household, it is possible to assess the equipment used: children of fathers with bachelor's degrees or higher had a 91.9% probability of having access to the Internet via a personal computer, television, or tablet, while this probability was 32 .7% for children of unschooled fathers, which demonstrates a

TABLE 4.3

Distribution of children by presence of computer or tablet at home, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HAS A PERSONAL COMPUTER OR TABLET AT HOME			
	Has a personal computer and a tablet	Has either a personal computer or a table	Has neither a personal computer nor a tablet	Total
No schooling (less than primary education)	8,0%	32,8%	59,2%	100%
Incomplete Elementary or Junior High School levels	18,6%	46,9%	34,5%	100%
Complete Elementary and Junior High School levels	27,9%	48,8%	23,2%	100%
Incomplete High School level	25,1%	53,9%	21,0%	100%
Complete High School level or incomplete Undergraduate level	38,0%	48,8%	13,2%	100%
Holds a bachelor's degree or higher	55,7%	38,5%	5,7%	100%
Total	19,6%	42,0%	38,4%	100%

Source
IMDS based on PNAD 2014 microdata.

direct relationship between higher levels of schooling and access to the Internet via this type of equipment.

Children of less schooled fathers are more likely to access through cell phones or other equipment than children of higher schooled fathers.

As a continuation of the theme of access to technology, let us analyze *ownership of a personal computer or tablet*. In line with the

results presented above, the highest probability of owning a microcomputer or tablet is among children of more highly schooled fathers, reaching 55.7% for children of fathers' holding bachelors' degrees, compared to 8.0% for children of fathers with no schooling. The probability that they have neither one nor the other is markedly and inversely related to the fathers' level of schooling: the probability is greater the lower the fathers' level of schooling – 59.2% for children of unschooled fathers and 5.7% for children of fathers with a bachelor's degree or higher. If we also consider ownership of at least one type of equipment, children of fathers with at least a bachelor's degree are more than twice as likely to have access to goods as children of unschooled fathers – 94.2% compared to 40.8%.

This indicator shows that adults, once the children of less schooled fathers, have a high probability of lacking in goods that can be used as important inputs in the production of knowledge. If these people have school--age children, this shortage could also affect them negatively.

Furthermore, this situation becomes more critical when considering demographic groups on which the problem falls more intensely – Blacks; residents in the Northeast; and residents in rural areas, where children of unschooled fathers are 64.0%, 72.6% and 84.4% likely not to have a microcomputer or tablet, respectively.

ACCESS TO TECHNOLOGY AND THE PANDEMIC

Access to technology is one of the means through which access to information occurs, one of the levers for social mobility. In this sense, the lack of access to equipment such as personal computers, tablets, and others, as well as the type of Internet connection that people have - or the lack of it -, can be obstacles to social mobility. In an article published by IMDS[27] on the subject, there is an important parallel to be drawn with the context of the COVID-19 pandemic[28] and measures to contain viral spread that involve suspension of in-class school attendance, often replaced by online activities. Children and young people living in homes that lack access to the Internet face relevant reductions in their possibilities of social mobility, considering that education is one of the pillars of social mobility and they lack the virtual means to access it. The consequences of this period may be verified in the future.

[27] https://imdsbrasil.org/en/news/articles/18/without-computers-or-the-internet-poorer-young-people-have-less-opportunities

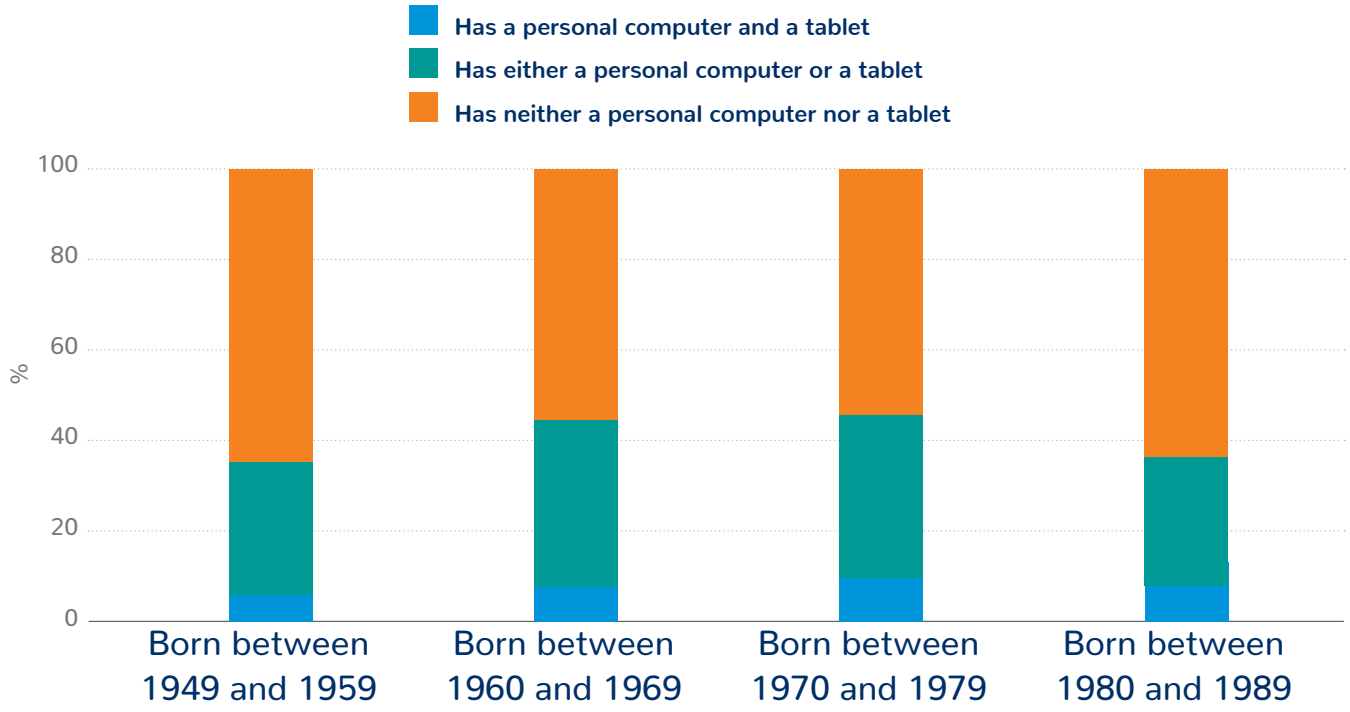
[28] About the Covid-19 pandemic, see: https://www.who.int/.

Finally, a point to note is that until the cohort of those born between 1970 and 1979 there was a drop in the probability of lack of access to these goods for children of unschooled fathers – leaving 64.8% for those born between 1949 and 1959, to 54.2% for those born in the 1970s –, which does not hold for the younger cohort – born between 1980 and 1989 – where the probability is 63.6%. However, this scarcity must be viewed with caution, as it is possible that these younger children will have access to these goods later in life.

The lack of access to telecommunications in the household is a residual event. Only 3.9% of all children live in homes where there is no telephone. Notwithstanding, this absence is related to the father's level of schooling:

GRAPH 4.1

Distribution of children of unschooled fathers by device used to access the Internet at home and birth cohort: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

7.9% of children of unschooled fathers live in a home where there is no landline and where no resident has a cell phone, while practically all (99.6%) of the children of fathers with a bachelor's degree or higher have a phone at home (Table 4.4).

Something positive to note is that the probability of children of unschooled fathers lacking these items has decreased over the generations – from 9.0% for those born between 1949 and 1959, to 6.4% for those born between 1970 and 1979 –, except for those born between 1980 and 1989, which, as we said in the previous case, may be a life cycle effect.

When looking at the possible cuttings by sex, skin color or race, and regionality, the data indicate that there is a stronger association between the lack of schooling of the father and the lack among men (probability of 10.1%), than with the lack of owning a telephone among women (6.0%). For Blacks, the probability of lacking among children of unschooled fathers is 9.9%, while for Whites it is 4.3%. For residents in the Northeast, this same probability is 12.5%, while in the North it is 15.8%. When compared to those verified in the Southeast (3.4%), there are differences of 9.1 and 12.4 percentage points, respectively. Finally, there is an even greater limitation in access to telephones in rural areas, in which children of unschooled fathers have a probability of a 21.6% lack. This result partly accounts for the differences observed in the North and Northeast regions where the presence of the rural population is relatively higher.

TABLE 4.4

Distribution of children by the presence of a telephone at home, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HAS A PHONE AT HOME		
	Has a phone at home	Has no phone at home	Total
No schooling (less than primary education)	92,1%	7,9%	100%
Incomplete Elementary or Junior High School levels	97,7%	2,3%	100%
Complete Elementary and Junior High School levels	99,0%	1,0%	100%
Incomplete High School level	98,4%	1,6%	100%
Complete High School level or incomplete Undergraduate level	99,4%	0,6%	100%
Holds a bachelor's degree or higher	99,6%	0,4%	100%
Total	96,1%	3,9%	100%

Source
IMDS based on PNAD 2014 microdata.

TABLE 4.5

Distribution of children by presence of television at home, given their fathers' level of schooling: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	NUMBER OF TV SETS IN THE HOME					NUMBER OF FLAT-SCREEN TV SETS IN THE HOME				
	One	Two	Three or more	None	Total	One	Two	Three or more	None	Total
No schooling (less than primary education)	58,9%	27,2%	10,3%	3,6%	100%	8,5%	8,5%	1,9%	54,4%	100%
Incomplete Elementary or Junior High School levels	43,5%	35,3%	19,8%	1,4%	100%	15,1%	15,1%	5,8%	36,3%	100%
Complete Elementary and Junior High School levels	36,3%	37,8%	25,0%	0,9%	100%	20,4%	20,4%	10,1%	26,1%	100%
Incomplete High School level	35,0%	43,0%	21,7%	0,3%	100%	18,4%	18,4%	11,6%	27,4%	100%
Complete High School level or incomplete Undergraduate level	29,8%	37,1%	32,6%	0,5%	100%	28,3%	28,3%	14,8%	17,9%	100%
Holds a bachelor's degree or higher	21,4%	35,9%	41,9%	0,8%	100%	31,2%	31,2%	25,5%	11,8%	100%
Total	45,7%	33,0%	19,4%	2,0%	100%	15,5%	15,5%	6,8%	38,4%	100%

In relation to television sets, it is clear that ownership is widespread – the probability of not owning a TV set is 2.0%, in general –, but in relation to the *number of TV sets in the home*, it appears that children of more educated fathers are more likely to have three TV sets or more: the probability for children of unschooled fathers is 10.3%, with a consistent increase until reaching 41.9% for children of fathers with a bachelor's degree or higher (Table 4.5).

In relation to flat-screen TVs, there is a strong relationship between ownership and higher paternal educational levels. Lack of access is closely related to the fathers' low level of schooling – children of unschooled fathers have a 54.4% probability of not having a flat-screen TV set (Table 4.5).

Access to pay-TV or reception of digital signal at home is also closely related to the fa-

Source
IMDS based on PNAD 2014 microdata.

TABLE 4.6

Distribution of children by access to pay TV or digital signal reception at home, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	ACCESS TO PAY-TV OR RECEPTION OF DIGITAL SIGNAL AT HOME			
	Has pay-TV and digital signal reception	Has either pay-TV or digital signal reception	Has no access to pay-TV nor to digital signal reception	Total
No schooling (less than primary education)	13,4%	26,8%	59,8%	100%
Incomplete Elementary or Junior High School levels	26,6%	33,4%	40,0%	100%
Complete Elementary and Junior High School levels	36,9%	38,2%	24,8%	100%
Incomplete High School level	36,5%	33,5%	30,0%	100%
Complete High School level or incomplete Undergraduate level	48,4%	33,1%	18,5%	100%
Holds a bachelor's degree or higher	61,4%	29,2%	9,4%	100%
Total	27,1%	31,3%	41,5%	100%

Source
IMDS based on PNAD 2014 microdata.

thers' level of schooling. Although 58.4% of the population analyzed have access to pay television and/or digital signal, the probability of access is not evenly distributed among children of fathers with different levels of schooling. The probability of simultaneous access to services grows, consistently, with the increase in the fathers' level of schooling, going from 13.4% for children of unschooled fathers to 61.4% among children of fathers with bachelors' degrees or higher. The inverse, as is to be expected, occurs in the category of lack of access to both pay-television and digital signal reception: the lower the fathers' level of schooling, the greater the probability of the child being in this category (Table 4.6).

The racial cutting indicates an even worse situation among Blacks: children of unschooled fathers have a 10.5% probability of accessing the two services simultaneously and a 63.7% chance of not having any access, while the probability for children of fathers with a bachelor's degree or higher is 52.0% and 14.6%, respectively.

For residents of the Northeast, among children of unschooled fathers, the odds are 7.0% (simultaneous access) compared to 71.9% (no access), and 46.2% and 15.4%, respectively, for children of fathers with a bachelor's degree or higher. Among children of unschooled fathers living in rural areas, 2.1% are likely to have simultaneous access to services and 82.7% to have neither pay-television nor digital signal.

From the indicator *has a car or motorcycle for personal use at home*, it is noted that exclusive ownership of a car is strongly associated with the father's education, in a positive way: the higher the fathers' level of schooling, the greater the probability that their children have only a car, reaching 74.8% for children of fathers holding a bachelor's degree. The same does not apply when analyzing the exclusive ownership of a motorcycle or ownership of both. In this regard, the chance of a child of an unschooled father having only a motorcycle (19.4%) is six times greater than that of a child whose father has at least completed the undergraduate level (3.3%).

Complementarily, the absence of both also has a high relationship with the fathers' level of schooling, but inversely: the lower the level of schooling of the fathers, the greater the probability of absence of both motor vehicles - 41.1% for children of fathers with no schooling and 10.6% for children of parents with a bachelor's degree or higher. This difference of around 30 percentage points between the probabilities of children of unschooled fathers and children of fathers with a bachelor's degree or higher, neither having a car nor a motorcycle, remained practically stable among all analyzed cohorts.

For Blacks, the lack of ownership of a car or motorcycle for personal use at home follows the same pattern in relation to the fathers' level of schooling, but with even greater probabilities: 45.6% among children of unschooled fathers and 18.0% among those of fathers with a bachelor's degree or higher. If we analyze by sex, these same probabilities are also higher for women, 43.6% and 12.4%, respectively, than for men, 38.3% and 8.8%.

Has a washing machine at home is an indicator that shows a high relationship with the fathers' level of schooling. Among children of unschooled fathers, the probability of not owning a washing machine is 54.3%, while for children of fathers with a bachelor's degree or higher it is only 6.5% - that is, among these children, the probability of owning a washing machine in the household is 93.5%. It is also worth mentioning the notable difference between children of unschooled fathers and children of fathers with incomplete Elementary or Junior High School levels, for whom the probability of not owning a washing machine drops 24.5 perm as A marked difference is observed from the analysis of skin color or race. Among Blacks, 48.2% do not have

TABLE 4.7

Distribution of children by ownership of a car or motorcycle for personal use at home, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HAS A CAR OR MOTORCYCLE FOR PERSONAL USE AT HOME				
	Has only a car	Has only a motorcycle	Has a car and a motorcycle	Has neither car nor motorcycle	Total
No schooling (less than primary education)	28,8%	19,4%	10,6%	41,1%	100%
Incomplete Elementary or Junior High School levels	46,9%	9,7%	15,5%	27,9%	100%
Complete Elementary and Junior High School levels	52,5%	7,2%	14,0%	26,3%	100%
Incomplete High School level	55,7%	10,6%	11,9%	21,8%	100%
Complete High School level or incomplete Undergraduate level	61,0%	5,3%	12,9%	20,8%	100%
Holds a bachelor's degree or higher	74,8%	3,3%	11,3%	10,6%	100%
Total	44,1%	12,1%	13,2%	30,6%	100%

Source
IMDS based on PNAD 2014 microdata.

access to a washing machine. The probability among children of unschooled fathers' not having a washing machine was 62.8%, and among children of fathers with at least a bachelor's degree was 16.7%. These figures contrast with the results for Whites: 22.0% in total did not have a washing machine, with odds of 39.6% and 4.2% for children of fathers with no schooling, and for those holding a bachelor's degree or higher, respectively.

TABLE 4.8

Distribution of children by ownership of a washing machine at home, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HAS A WASHING MACHINE AT HOME		
	Has a washing machine	Has no washing machine	Total
No schooling (less than primary education)	45,7%	54,3%	100%
Incomplete Elementary or Junior High School levels	70,2%	29,8%	100%
Complete Elementary and Junior High School levels	79,2%	20,8%	100%
Incomplete High School level	72,9%	27,1%	100%
Complete High School level or incomplete Undergraduate level	87,0%	13,0%	100%
Holds a bachelor's degree or higher	93,5%	6,5%	100%
Total	65,4%	34,6%	100%

Source
IMDS based on PNAD 2014 microdata.

In general, the results presented show a strong relationship between the fathers' level of schooling and access to technology, goods, and services, which are consumption items closely related to income, which also has a strong relationship with the fathers' level of schooling, as shown in section 2.

From this set of determinations on living conditions, it is possible to draw parallels with housing conditions and the consumption of goods and services by the household.

4.2. Results compared between 1996 and 2014

Although the central analysis of this synopsis of indicators is supported by the association between the children's socioeconomic indicators and their fathers' level of schooling, based on the most recent information that enables the study of intergenerational mobility in Brazil - the 2014 PNAD with its Mobility Supplement Socio-Occupational -, this subsection will be responsible for presenting the comparative result between 1996 and 2014 for the indicators *has a refrigerator or freezer at home* and *has a washing machine at home*[29].

From the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*, it is possible to find this comparative result for people aged 25 to 64, according to their age on the reference day of the surveys. With this purpose in mind, the 2014 PNAD sample was treated, allowing compatibility for comparison, which justifies variations between the 2014 results presented in this subsection and in the previous subsection.

The probability of lacking a refrigerator or freezer at home changes from a situation strongly related to the fathers' level of schooling, in 1996, to a situation in which practically all children access at least one of the goods, in 2014, regardless of the fathers' level of schooling.

In 1996, the probability of deficiency was 17.9% and, the lower the fathers' level of schooling, the greater the probability of their children not having either a refrigerator or a freezer - 30.8% among children of unschooled fathers compared to 0,9% among children of fathers with a bachelor's degree. In 2014, the probability of this deficiency for the population analyzed was 1.6%.

Note that the probability of owning a washing machine increased for children of fathers at all levels of schooling. However, the evolution for children of unschooled fathers stood out, going from 19.7% for people aged 25 to 64 in 1996 to 46.2% for people in the same age group in 2014. This movement indicates a reduction in the strong relationship between the fathers' lack of schooling and the child's not owning a washing machine as an adult (Table 4.10).

However, there is still a strong inverse relationship between the level of schooling and having a washing machine in the household:

[29] The other indicators analyzed in the previous subsection, from PNAD 2014, were not possible to reproduce with the data provided by PNAD 1996.

TABLE 4.9

Distribution of children by ownership of a refrigerator or freezer at home, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	HAS A REFRIGERATOR OR FREEZER AT HOME							
	PNAD 1996				PNAD 2014			
	Has neither refrigerator nor freezer	Has either a refrigerator or a freezer	Has a refrigerator and a freezer	Total	Has neither refrigerator nor freezer	Has either a refrigerator or a freezer	Has a refrigerator and a freezer	Total
No schooling (less than primary education)	30,8%	58,6%	10,6%	100%	3,1%	82,9%	13,9%	100%
Incomplete Elementary or Junior High School levels	10,1%	65,0%	24,8%	100%	0,9%	78,0%	21,1%	100%
Complete Elementary and Junior High School or incomplete High School level	2,6%	58,5%	38,9%	100%	0,5%	79,6%	19,9%	100%
Complete High School level or incomplete Undergraduate level	1,4%	51,3%	47,3%	100%	0,4%	82,1%	17,5%	100%
Holds a bachelor's degree or higher	0,9%	41,7%	57,3%	100%	0,0%	73,7%	26,3%	100%
Total	17,9%	61,2%	21,0%	100%	1,6%	80,1%	18,3%	100%

the higher the fathers' level of schooling, the lower the probability of lack, a pattern observed in the results of both surveys.

In order to finalize the synthesis of socioeconomic indicators provided by IMDS and add more elements to the understanding of intergenerational mobility in Brazil, the next section will analyze the fertility and mortality behavior of women's descendants and the household composition, conditioned togiven the fathers' level of schooling.

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 4.10

Distribution of children by ownership of a washing machine at home, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	HAS A WASHING MACHINE AT HOME					
	PNAD 1996			PNAD 2014		
	Has no washing machine	Has a washing machine	Total	Has no washing machine	Has a washing machine	Total
No schooling (less than primary education)	80,3%	19,7%	100%	53,8%	46,2%	100%
Incomplete Elementary or Junior High School levels	58,7%	41,3%	100%	29,3%	70,7%	100%
Complete Elementary and Junior High School or incomplete High School level	37,6%	62,4%	100%	21,5%	78,5%	100%
Complete High School level or incomplete Undergraduate level	29,5%	70,5%	100%	14,0%	86,0%	100%
Holds a bachelor's degree or higher	20,4%	79,6%	100%	8,1%	91,9%	100%
Total	65,0%	35,0%	100%	35,5%	64,5%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

To return to the summary

PART FIVE

5 Household arrangement, daughters' fertility, mortality of their descendants and the relationship with the fathers' level of schooling

CHAPTER HIGHLIGHTS:

- The data suggest that the higher the fathers' level of schooling, the less likely their children are to live in households with more people. Among children of parents who hold a bachelor's degree or higher, there is less probability of living in households with 5 or more people (14.2%), compared to children of unschooled fathers (23.9%).

- There is no significant difference in living arrangements. For example, the proportion of children whose father had no schooling and who belong to a family whose arrangement is characterized by the presence of only one father (or mother) - that is, a single parent with child - is 12.4% (10.9% for people whose father has a bachelor's degree or higher). The proportion of children belonging to families with the presence of both parents varies between 52.7% and 55.7%, with no relation to the father's level of schooling.

- The analysis of living arrangements by sex shows that men are less likely to live in a single-parent arrangement with children than women - 7.8% compared to 16.5%. Among children of fathers holding a bachelor's degree or higher, the odds are 7.9% and 14.0%, in the same order. Among children of unschooled fathers, the probability for women is more than twice that observed for men, 17.5% compared to 6.5%.

- The probability of women not having children increases as the level of schooling of these women's fathers increases – from 12.6% for women with unschooled fathers to 43.0% for those whose fathers held bachelor's degrees or higher.

- Women who are the children of unschooled fathers have a 47.0% chance of having three or more children. Among the other levels of the fathers' schooling, daughters of fathers with incomplete Elementary or Junior High School levels were more likely to have two children (29.1%). For the other women, the highest probability was that of not having a child, a result that increased with the rise in the fathers' level of schooling.

- The probability of not having a live-born child who is deceased increases with the rise in the fathers' level of schooling, going from 83.0% for daughters of unschooled fathers to 96.6% for daughters of fathers holding a bachelor's degree or higher..

To return to the summary

The previous sections presented the relationship between the fathers' level of schooling and their children's level of schooling, as well as the relationship between the fathers' level of schooling and other socioeconomic outcomes of their children, such as employment, income, and consumption. This section will provide an analysis of indicators related to the household context, the fertility of daughters and the mortality of their descendants.

Thus, the aim of the section is to pinpoint, if any, the relationship between the *fathers' level of schooling* and the following outcomes for children: *household arrangement*, *number of people living in the household*, *number of live-born children*, *condition of the last live-born child and number of live-born children who are deceased* – these last three indicators refer only to female daughters.

The first subsection is based on data presented in the Intergenerational Mobility: PNAD 2014 panel, bringing to light the most recent information captured by the intergenerational mobility indicators presented by IMDS. The second subsection presents comparisons between the results from the 1996 and 2014 PNADs and corresponds to the indicators presented in the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*[30].

[30] The results will show differences for the year 2014 between the panels due to the considered sample. In addition to the difference between the age groups captured, being 25 to 65 years of age in the panel Intergenerational Mobility: PNAD 2014, and 25 to 64 years of age in the panel Intergenerational Mobility: a comparison of the results in 1996 and 2014, for compatibility and possibility of comparison with 1996, a restriction was made on the 2014 sample: only information referring to respondents to the Supplement for Socio-Occupational Mobility with a household status of reference person or spouse was considered.

5.1. Relationship between the fathers' level of schooling, the children's household context, the fertility of daughters and the mortality of their descendants

The first step in analyzing the subsection will be to understand the patterns related to the number of people living in the household, given the fathers' level of schooling.

The probability of people living in households with five or more people is ten percentage points higher for children of unschooled fathers than for children of fathers with a bachelor's degree or higher. Among men, the probability that they live in households with five or more people drops from 24.0%, among children of unschooled fathers, to 11.6%, among children of fathers with a bachelor's degree or higher. On the other hand, this drop is less pronounced for women, from 23.8% to 16.8%.

For Black men, the probability for children of unschooled fathers is 25.9% and 10.1% for children of fathers with a bachelor's degree or higher. Among Black women, the odds are 26.2% and 21.2%, respectively. That is, even the daughters of fathers with bachelors' degrees or higher, these Black women are more likely to live in households with five people or more. The percentage of people in households with five or more people in the Northeast and the North is also higher, 26.3% and 31.5% in total, respectively, and in rural areas, 26.4%.

There is a certain consistency in the distribution of probabilities when comparing the types of living arrangements with the fathers' level of schooling. The absolute predominance is the living arrangement in which a couple lives with children (54.4%). This percentage is practically invariant for all levels of education. The same is true for childless couples. In the case of single-parent and single-person arrangements, the distribution repeats the average behavior, except for children of fathers with a bachelor's degree or higher: in such cases, there is a higher probability of a single-person arrangement (13.6%), that is, a household in which there is only the reference person, rather than one with a single parent with child(ren) (10.9%) – a household in which the reference person lives with the child(ren), and without a spouse. We also ob-

TABLE 5.1

Distribution of children by number of residents in the household, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	NUMBER OF PEOPLE RESIDING IN THE HOUSEHOLD					
	One person	Two people	Three people	Four people	Five or more people	Total
No schooling (less than primary education)	6,0%	19,9%	26,5%	23,7%	23,9%	100%
Incomplete Elementary or Junior High School levels	5,2%	19,8%	29,3%	25,6%	20,2%	100%
Complete Elementary and Junior High School levels	5,8%	20,5%	27,9%	25,9%	19,8%	100%
Incomplete High School level	2,7%	21,4%	29,4%	25,7%	20,7%	100%
Complete High School level or incomplete Undergraduate level	5,8%	21,6%	28,7%	26,7%	17,2%	100%
Holds a bachelor's degree or higher	8,5%	23,2%	29,1%	25,1%	14,2%	100%
Total	5,7%	20,3%	28,1%	25,0%	20,8%	100%

Source
IMDS based on PNAD 2014 microdata.

served that other types of living arrangements are rarer when compared to other levels of schooling – 4.3% for those holding bachelors' degrees or higher, compared to percentages between 6.4% and 9.2% for the others.

The analysis by sex shows that, among men, the children of fathers with a bachelor's degree or higher, the probability of living in a single-parent arrangement with child(ren) is 7.9%, while for that of a single-person arrangement, it is 14.8%. Among women, who are also children of fathers with a bachelor's degree or higher, the probability of living in a single-parent arrangement with a child(ren) is 14.0% and for a single person, it is 12.3%.

TABLE 5.2

Distribution of children by household arrangement, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	HOUSEHOLD ARRANGEMENT					
	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Total
No schooling (less than primary education)	52,7%	17,0%	12,4%	9,4%	8,4%	100%
Incomplete Elementary or Junior High School levels	55,7%	15,8%	12,2%	8,3%	8,0%	100%
Complete Elementary and Junior High School levels	54,2%	16,8%	13,4%	8,4%	7,2%	100%
Incomplete High School level	54,7%	17,2%	12,8%	6,0%	9,2%	100%
Complete High School level or incomplete Undergraduate level	55,1%	16,5%	12,9%	9,1%	6,4%	100%
Holds a bachelor's degree or higher	54,0%	17,2%	10,9%	13,6%	4,3%	100%
Total	54,0%	16,4%	12,4%	9,0%	7,7%	100%

Source
IMDS based on PNAD 2014 microdata.

For daughters of unschooled fathers, the probability of forming single-parent families with child(ren) was 17.5%, while the probability of living in a single-person household was 8.3%.

Analyzing indicators of fertility and mortality of the offspring of daughters, based on the indicator *number of liveborn children (among the women)*, note that the probability that women had not had children increases as the level of schooling of these women's fathers increases. – from 12.6% for women with unschooled fathers to 43.0% for those whose fathers had a bachelor's degree or higher.

The highest probability of number of live-born children is in the category three chil-

TABLE 5.3

Distribution of children, by sex and by home arrangement, given their fathers' level of schooling: Brazil, 2014

FATHERS' LEVEL OF SCHOOLING	HOUSEHOLD ARRANGEMENT											
	MEN						WOMEN					
	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Total	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Total
No schooling (less than primary education)	57,6%	17,6%	6,5%	10,8%	7,5%	100%	48,5%	16,5%	17,5%	8,3%	9,2%	100%
Incomplete Elementary or Junior High School levels	60,6%	15,8%	8,1%	9,0%	6,5%	100%	51,2%	15,8%	15,9%	7,6%	9,4%	100%
Complete Elementary and Junior High School levels	58,0%	17,4%	9,6%	9,4%	5,6%	100%	51,2%	16,2%	17,1%	7,5%	8,6%	100%
Incomplete High School level	60,2%	19,5%	8,9%	6,6%	4,9%	100%	50,6%	14,5%	17,4%	5,4%	14,3%	100%
Complete High School level or incomplete Undergraduate level	57,8%	19,9%	9,3%	11,1%	5,9%	100%	48,4%	17,0%	16,2%	7,3%	6,8%	100%
Holds a bachelor's degree or higher	55,7%	18,6%	7,9%	14,8%	3,0%	100%	52,3%	15,8%	14,0%	12,3%	5,5%	100%
Total	58,8%	16,7%	7,8%	10,1%	6,5%	100%	50,4%	16,2%	16,5%	8,0%	8,9%	100%

dren or more (31.9%). However, according to the fathers' level of schooling, this percentage is strongly influenced by the result of women, the daughters of unschooled fathers, whose probability of bearing three or more children is 47.0%. Among the other levels of schooling of fathers, the daughters of fathers with incomplete Elementary or Junior High School were more likely to have two children (29.1%). For the other women, the highest probability was of not having a child, a result that increased with the rise in the fa-

Source
IMDS based on PNAD 2014 microdata.

TABLE 5.4

Distribution of daughters by number of live-born children, given their fathers' level of schooling: Brazil, 2014

FATHER'S LEVEL OF SCHOOLING	NUMBER OF LIVEBORN CHILDREN (AMONG THE WOMEN)					
	One child	Two children	Three children or more	No liveborn child	No child	Total
No schooling (less than primary education)	14,4%	25,9%	47,0%	0,1%	12,6%	100%
Incomplete Elementary or Junior High School levels	22,4%	29,1%	28,1%	0,1%	20,4%	100%
Complete Elementary and Junior High School levels	25,1%	22,9%	20,6%	0,1%	31,4%	100%
Incomplete High School level	27,6%	19,6%	16,5%	-	36,3%	100%
Complete High School level or incomplete Undergraduate level	24,7%	23,2%	13,5%	0,4%	38,2%	100%
Holds a bachelor's degree or higher	20,0%	23,6%	13,4%	0,1%	43,0%	100%
Total	19,9%	26,6%	31,9%	0,1%	21,5%	100%

thers' level of schooling, reaching 43.0% for daughters of fathers with a bachelor's degree or higher.

The pattern is similar for both White and Black women, apart from Black women whose fathers have incomplete Elementary or Junior High School levels, where the highest probability was that they bore three or more children (30.4%). Therefore, the results show that fertility is strongly related to the fathers' level of schooling.

Among those women who bore children, it is possible to analyze the number of live-born children who are already deceased and note

Source
IMDS based on PNAD 2014 microdata.

that, in general, the probability that they did not have any deceased child was 89.1%, compared to 7.6% for their having had a deceased child. The chance of a woman having at least one deceased child is relatively low (10.9%), but in the case of women, daughters of unschooled fathers, this probability rises to 17.0% (and this impacts the average). Apart from this group, for all other levels of schooling of fathers, the chance of the occurrence of the death of a child is practically half. In addition, the probability of not having a deceased child grows according to the increase in the fathers' level of schooling, going from 83.0% for daughters of unschooled fathers to 96.6% for daughters of fathers with a bachelor's degree or higher. This difference is not smooth. There is a jump of almost 10 percentage points when the fathers' level of schooling is incomplete Elementary or Junior High School levels (83.0% and 92.2%), and from this level of schooling onwards, the figure remains above 90% for all other levels of schooling.

On the other hand, the probability that a (single) child is deceased increases with the decrease in the fathers' level of schooling, going from 2.6% for daughters of fathers with a bachelor's degree or higher, to 11.2% for daughters of unschooled fathers.

TABLE 5.5

Distribution of daughters who had children who are already deceased, given their fathers' level of schooling: Brazil, 2014

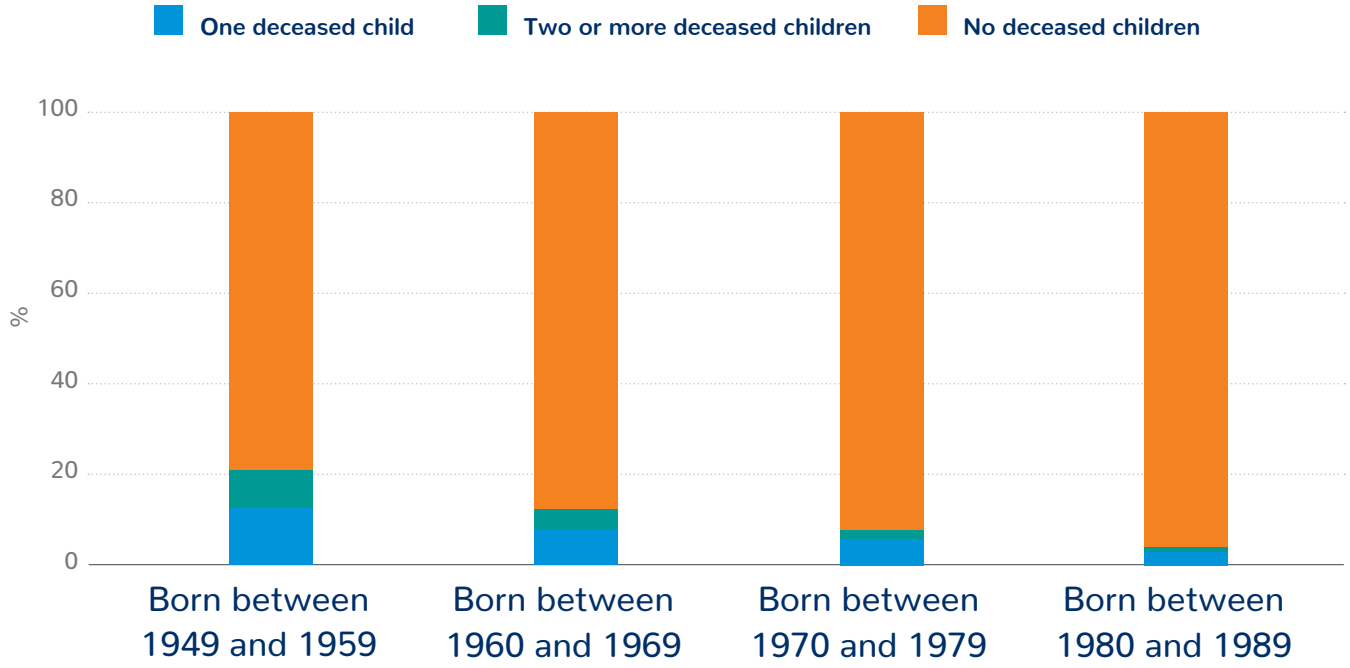
FATHER'S LEVEL OF SCHOOLING	NUMBER OF LIVEBORN CHILDREN ALREADY DECEASED (AMONG THE WOMEN)			
	One deceased child	Two or more deceased children	No deceased child	Total
No schooling (less than primary education)	11,2%	5,8%	83,0%	100%
Incomplete Elementary or Junior High School levels	5,9%	1,9%	92,2%	100%
Complete Elementary and Junior High School levels	4,4%	0,9%	94,7%	100%
Incomplete High School level	6,9%	1,8%	91,3%	100%
Complete High School level or incomplete Undergraduate level	4,1%	1,8%	94,2%	100%
Holds a bachelor's degree or higher	2,6%	0,8%	96,6%	100%
Total	7,6%	3,3%	89,1%	100%

Source
IMDS based on PNAD 2014 microdata.

From the analysis of cohorts, available in the *Compare Different Characteristics* panel, it is noteworthy that the probability of death of live-born children decreases along them: from 20.7% for those born between 1949

GRAPH 5.1

Distribution of daughters by birth cohort who had children who are already deceased: Brazil, 2014



Source
IMDS based on PNAD 2014 microdata.

and 1959, to 4.3% for those born between 1980 and 1989. There is, therefore, a significant gain for the younger cohorts, as a result of several factors, among which general advances in medicine and in medical practice, the increase in vaccination, and prenatal and postnatal care stand out, amongst others.

In general, the indicators presented in this section reveal patterns of behavior that express a relationship between their results and the fathers' level of schooling. Thus, compared to children of fathers with a bachelor's degree or higher, the chances are greater that children of unschooled fathers live in households with five people or more, do not live alone, that daughters have three or more live-born children, and that at least one of them is deceased.

5.2. Results compared between 1996 and 2014

The general line of analysis proposed in this synopsis of indicators is based on the association between the children's socioeconomic indicators and the fathers' level of schooling. For this, the most recent information that enables the study of intergenerational mobility in Brazil is used – PNAD 2014, with its Supplement for Socio-Occupational Mobility.

However, a comparative analysis of results can be made from another similar survey, the 1996 PNAD – which also presents a Supplement on Social Mobility. The comparison between the two allows the identification, if any, of changes in the relationship between the fathers' level of schooling and the socioeconomic results of their children at different moments in time.

From the panel *Intergenerational Mobility: a comparison of the results in 1996 and 2014*, it is possible to find these comparative results for people aged 25 to 64, according to their age on the reference day of the surveys. For this purpose, the 2014 PNAD sample was treated, allowing compatibility for comparison – only information from reference persons and spouses was considered – which justifies variations when compared to the 2014 results presented in this subsection and in the previous subsection.

In 1996, the probability that the *number of people residing in the household* was five or more is practically double that presented in 2014 – 36.5% compared to 16.7%. There is a clear trend towards reduction of the probability of being in this category, according to the increase in the fathers' level of schooling, based on 1996 results. Additionally, the reduction in housing arrangements with more residents is quite remarkable. This is how the general percentages of arrangements with only two people increase (12.1% in 1996 and 22.5% in 2014) and with one person (3.7% and 7.2%, respectively).

On the other hand, in 2014 the difference between the probabilities of residing only one person in the household were smoothed. While in 1996, for children of unschooled fathers, there is a 3.4% probability of being in this category, compared to 9.2% for children of unschooled fathers, in 2014 these probabilities rose to 6.9% and 12.0%, respectively.

If the comparison of household arrangements in 1996 and 2014 is analyzed, the-

TABLE 5.6

Distribution of children by number of residents in the household, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	NUMBER OF PEOPLE RESIDING IN THE HOUSEHOLD											
	PNAD 1996						PNAD 2014					
	One person	Two people	Three people	Four people	Five or more people	Total	One person	Two people	Three people	Four people	Five or more people	Total
No schooling (less than primary education)	3,4%	10,9%	17,7%	23,8%	44,1%	100%	6,9%	20,6%	27,2%	23,8%	21,5%	100%
Incomplete Elementary or Junior High School levels	3,4%	12,3%	21,5%	29,9%	32,8%	100%	6,4%	22,2%	30,4%	26,0%	15,1%	100%
Complete Elementary and Junior High School or incomplete High School level	4,9%	14,0%	23,7%	31,1%	26,4%	100%	7,7%	24,3%	29,9%	23,0%	15,1%	100%
Complete High School level or incomplete Undergraduate level	5,7%	17,0%	24,0%	31,2%	22,1%	100%	8,5%	27,5%	30,0%	24,7%	9,4%	100%
Holds a bachelor's degree or higher	9,2%	20,5%	24,1%	30,1%	16,1%	100%	12,0%	29,5%	26,6%	22,0%	9,9%	100%
Total	3,7%	12,1%	20,2%	27,5%	36,5%	100%	7,2%	22,5%	29,0%	24,6%	16,7%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

re is a noticeable change in the probability of composition of specific arrangements. In 2014, the probability of household arrangements formed by childless couples is, in general, almost double that verified in 1996 – 20.0% and 10.6%, respectively. This change is perceived, even if to different degrees, for children of fathers at all levels of schooling, even though there is an increasing pattern with the father's level of schooling. On the other hand, the probability of couples with child(ren) decreases: in 2014 it is 57.7%, compared to 71.3% in 1996.

The case of single-parent arrangements with child(ren) increases, from 7.0% in 1996 to

TABLE 5.7

Distribution of children by household arrangement, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	HOUSEHOLD ARRANGEMENT											
	PNAD 1996						PNAD 2014					
	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Total	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Others
No schooling (less than primary education)	70,2%	9,7%	7,9%	4,8%	7,3%	100%	56,4%	19,0%	9,3%	9,1%	6,2%	100%
Incomplete Elementary or Junior High School levels	72,9%	10,7%	6,3%	5,1%	5,0%	100%	60,0%	19,2%	8,3%	8,6%	3,8%	100%
Complete Elementary and Junior High School or incomplete High School level	71,5%	11,7%	6,0%	7,0%	3,8%	100%	57,4%	22,4%	6,9%	9,7%	3,6%	100%
Complete High School level or incomplete Undergraduate level	68,4%	14,5%	6,9%	7,6%	2,7%	100%	54,6%	23,8%	8,1%	11,1%	2,4%	100%
Holds a bachelor's degree or higher	60,9%	17,7%	8,4%	11,1%	1,9%	100%	53,1%	24,1%	5,5%	16,1%	1,1%	100%
Total	71,3%	10,6%	7,0%	5,2%	5,8%	100%	57,7%	20,0%	8,5%	9,4%	4,4%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

8.5% in 2014, in total – and in 2014 starts to have a clearer increase ratio for children of less educated fathers and decreases for children of fathers with a bachelor's degree or higher.

In the case of women, the overall probability of single-parent arrangements with child(ren) goes from 11.7% to 14.1% between 1996 and 2014, also keeping, in 2014, an increasing ratio for daughters of less educated fathers and a reduction for daughters of fathers with a bachelor's degree or higher.

Still, among women, the number of live-born children follows the same trends, despite major changes in general terms: daughters

TABLE 5.8

Distribution of daughters by household arrangement, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	HOUSEHOLD ARRANGEMENT											
	PNAD 1996						PNAD 2014					
	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Total	A couple with child(ren)	A couple with no child	Single parent with child(ren)	Unipersonal	Others	Total
No schooling (less than primary education)	65,4%	9,4%	13,0%	4,0%	8,2%	100%	51,9%	18,1%	15,6%	7,4%	7,0%	100%
Incomplete Elementary or Junior High School levels	69,1%	10,1%	10,7%	4,6%	5,6%	100%	55,7%	18,6%	13,8%	7,4%	4,5%	100%
Complete Elementary and Junior High School or incomplete High School level	68,6%	10,8%	10,2%	5,9%	4,4%	100%	54,0%	21,0%	11,5%	8,6%	4,9%	100%
Complete High School level or incomplete Undergraduate level	65,3%	12,4%	11,7%	7,9%	2,7%	100%	51,2%	23,8%	13,3%	9,3%	2,4%	100%
Holds a bachelor's degree or higher	56,0%	16,6%	14,8%	10,6%	2,1%	100%	52,5%	21,6%	9,6%	15,2%	1,1%	100%
Total	67,2%	10,0%	11,7%	4,6%	6,5%	100%	53,6%	19,2%	14,1%	8,0%	5,1%	100%

Source
IMDS based on PNAD 1996 and 2014 microdata.

of more educated fathers are more likely to be childless than daughters of less educated fathers, a pattern that remained in 1996 and 2014, while daughters of less educated fathers are more likely to have three or more children in both years. However, for daughters of fathers with no schooling or with incomplete Elementary or Junior High School levels, the odds of having at least three live-born children reduced by around 15 percentage points. Overall, the probability of not having children went from 7.4% to 12.8%, while the probability of having three or more children was reduced from 53.8% to 37.1% – comparing the results of 1996 and 2014.

TABLE 5.9

Distribution of daughters by number of live-born children, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	NUMBER OF LIVEBORN CHILDREN (AMONG THE WOMEN)											
	PNAD 1996						PNAD 2014					
	One child	Two children	Three or more children	No liveborn children	No child	Total	One child	Two children	Three or more children	No liveborn children	No child	Total
No schooling (less than primary education)	9,4%	19,0%	66,2%	0,2%	5,2%	100%	13,8%	27,7%	51,3%	0,1%	7,1%	100%
Incomplete Elementary or Junior High School levels	15,2%	29,1%	47,7%	0,1%	7,9%	100%	22,0%	32,9%	32,3%	0,1%	12,6%	100%
Complete Elementary and Junior High School or incomplete High School level	19,6%	35,0%	33,5%	0,1%	11,8%	100%	27,7%	26,5%	25,4%	0,2%	20,2%	100%
Complete High School level or incomplete Undergraduate level	20,0%	34,6%	30,4%	0,2%	14,8%	100%	27,4%	30,4%	17,3%	0,5%	24,4%	100%
Holds a bachelor's degree or higher	19,8%	32,2%	27,5%	0,2%	20,2%	100%	22,7%	30,9%	18,2%	0,1%	28,2%	100%
Total	13,2%	25,4%	53,8%	0,1%	7,4%	100%	19,8%	30,2%	37,1%	0,2%	12,8%	100%

Among those live-born but who later died, it is possible to verify that the relationship between the fathers' level of schooling and the mortality of the offspring of daughters maintains the pattern over time: there is a greater probability that grandchildren of less educated grandparents are deceased rather than those of more educated grandparents. However, there is a reduction in the probability of death of live-born children among women for all levels of schooling of their fathers between these two years. While the death of two children or more was 9.0% in 1996, in 2014 it was 3.4%. In relation to one decea-

Source
IMDS based on PNAD 1996 and 2014 microdata.

TABLE 5.10

Distribution of daughters who had children who are already deceased, given their fathers' level of schooling: Brazil, 1996 and 2014

FATHERS' LEVEL OF SCHOOLING	NUMBER OF LIVEBORN CHILDREN ALREADY DECEASED (AMONG THE WOMEN)									
	PNAD 1996					PNAD 2014				
	Three or more deceased children	Two deceased children	One deceased child	No deceased children	Total	Three or more deceased children	Two deceased children	One deceased child	No deceased children	Total
No schooling (less than primary education)	8,3%	6,6%	14,9%	70,2%	100%	2,5%	3,2%	11,2%	83,1%	100%
Incomplete Elementary or Junior High School levels	2,4%	3,0%	10,1%	84,5%	100%	0,6%	1,3%	5,5%	92,5%	100%
Complete Elementary and Junior High School or incomplete High School level	0,5%	1,6%	5,5%	92,5%	100%	0,3%	0,7%	3,6%	95,4%	100%
Complete High School level or incomplete Undergraduate level s	0,7%	0,8%	6,0%	92,5%	100%	0,6%	1,3%	3,6%	94,5%	100%
Holds a bachelor's degree or higher	0,9%	0,9%	4,6%	93,6%	100%	0,7%	0,2%	2,4%	96,7%	100%
Total	4,7%	4,3%	11,7%	79,2%	100%	1,4%	2,0%	7,4%	89,2%	100%

sed child, the number decreases from 11.7% to 7.4%. This information indicates substantial improvement in this regard.

In general, despite improved results over the years, the patterns of relationship between the fathers' level of schooling and the results of the children's living arrangements, the fertility of the daughters and the mortality of their descendants are maintained. In this sense, there is no substantial change in the character of intergenerational mobility related to the indicators presented here.

Source
IMDS based on PNAD 1996 and 2014 microdata.

To return to the summary

APPENDIX

About the sample and the database

In this publication, the indicators analyzed were produced by IMDS based on PNAD microdata from 1996 and 2014 and its supplements on socio-occupational mobility, made available by IBGE. PNAD 2014 is the most recent source of national data that enables the analysis of intergenerational mobility.

Based on the 1996 PNAD Supplement on Social Mobility, IBGE provides information on literacy and level of schooling of fathers and mothers of people aged 15 or over who occupied the household as a reference person and/or spouse. Among these people, for those who had some job in the 365-day reference period, it also provides information about the first job of at least a 6-month stay, if any, and the father's occupation when the individual was 15 years old.

From the Supplement to the 2014 PNAD on socio-occupational mobility, IBGE presents, for a resident of the household aged 16 or over, randomly selected, information about the place of residence at 15 years of age, and the father's and mother's literacy and level of schooling, the condition in occupation, characteristics of the work of the father or mother when the person was 15 years of age and information about the first job, if any.

In addition to supplementary information, both surveys provide information on the following topics: characteristics of the household, general characteristics of residents, migration, education, labor, income, and fertility.

For the construction and presentation of indicators, some treatments were given to the PNAD 1996 and 2014 samples[31], as indicated in Diagram A.1. These indicators can be found on the IMDS Portal[32], from the National Indicator Panels: Intergenerational Mobility: PNAD 1996; Intergenerational Mobility: PNAD 2014; Intergenerational Mobility: a comparison of the results in 1996 and 2014; Intragenerational Mobility: a life cycle analysis (1996 and 2014); and Intergenerational Mobility: generations.

[31] For details of the PNAD 1996 and 2014 sample, see: IBGE (1997) and IBGE (2015).

[32] https://imdsbrasil.org/en

As this is a sample survey, caution must be exercised when analyzing results. Therefore, online panels show the sample and population totals for cross-checks made in transition matrices. For this report, disaggregation of indicators in which the PNAD sample is less than 100 for each analyzed subgroup were disregarded from the analysis.

DIAGRAM A

Panels, cohorts and samples analyzed

PANEL		COHORTS	SAMPLE
Intergenerational Mobility: PNAD 1996	Born between 1962 and 1971	Cohorts were defined based on the presumed year of birth given their ages at the reference day of the survey. 25-to-34-year-olds, born between 1962 and 1971; 35-to-44-year-olds, born between 1952 and 1961; 45-to-54-year-olds, born between 1942 and 1951; and 55-to-65-year-olds, born between 1931 and 1941.	People with indeterminate level of schooling are not considered, nor are people who did not know the level of schooling of their father (or mother), nor people under 25 or over 65 years of age on the reference day of the survey.
	Born between 1952 and 1961		
	Born between 1942 and 1951		
	Born between 1931 and 1941		
Intergenerational Mobility: PNAD 1996	Born between 1980 and 1989	Cohorts were defined based on the presumed year of birth given their ages at the reference day of the survey. 25-to-34-year-olds, born between 1980 and 1989; 35-to-44-year-olds, born between 1970 and 1979; 45-to-54-year-olds, born between 1960 and 1969; and 55-to-65-year-olds, born between 1949 and 1959.	People with indeterminate level of schooling are not considered, nor are people who did not know the level of schooling of their father (or mother) when they were 15 years old, nor people under 25 or over 65 years of age on the reference day of the survey.
	Born between 1970 and 1979		
	Born between 1960 and 1969		
	Born between 1949 and 1959		
Intergenerational Mobility: a comparison of the results in 1996 and 2014	25 to 34 years of age	Age groups were defined for each year based on their ages on the reference day of the survey.	People who did not know the level of schooling of their father (or mother) when they were 15 years old are not considered, nor are people with a condition in the household unit different from that of the reference person or spouse (PNAD 2014) – allowing comparability with the 1996 survey, in which the Social Mobility Supplement is restricted to that population -, nor people who did not know the level of schooling of their father (or mother) (PNAD 1996), nor people with indeterminate level of schooling, nor people under 25 or over 64 years of age on the reference day of the survey.
	35 to 44 years of age		
	45 to 54 years of age		
	55 to 64 years of age		

PAINEL		COORTES	SAMPLE
Intragenerational Mobility: a life cycle analysis (1996 and 2014)	Born between 1960 and 1969	Cohorts were defined based on the presumed year of birth given their ages at the reference day of the survey. Born between 1950 and 1959, 37-to-46-year-olds, in 1996, and 55-to-64-year-olds, in 2014; born between 1960 and 1969, 27-to-36-year-olds, in 1996, and 45-to-54-year-olds, in 2014.	People who did not know the level of schooling of their father (or mother) when they were 15 years old are not considered, nor are people with a condition in the household unit different from that of the reference person or spouse (PNAD 2014) – allowing comparability with the 1996 survey, in which the Social Mobility Supplement is restricted to that population -, nor people who did not know the level of schooling of their father (or mother) (PNAD 1996), nor people under 27 or over 46 years of age on the reference day of PNAD 1996, nor people under 45 or over 64 years of age on the reference day of PNAD 2014.
	Born between 1950 and 1959		
Intergenerational Mobility: generations	The 20's	Cohorts were defined based on the decade in which individuals were born, based on the first year of the decade. The year of birth was presumed based on their ages on the reference day of the survey. The 20's, 67-to-76-year-olds, in 1996; The 30's, 57-to-66-year-olds, in 1996; The 40's, 47-to-56-year-olds, in 1996, and 65-to-74-year-olds, in 2014; The 50's, 37-to-46-year-olds, in 1996, and 55-to-64-year-olds, in 2014; The 60's, 27-to-36-year-olds, in 1996, and 45-to-54-year-olds, in 2014; The 70's, 35-to-44-year-olds, in 2014; and The 80's, 25-to-34-year-olds, in 2014.	People who did not know the level of schooling of their father (or mother) when they were 15 years old are not considered, nor are people with a condition in the household unit different from that of the reference person or spouse (PNAD 2014) – allowing comparability with the 1996 survey, in which the Social Mobility Supplement is restricted to that population -, nor people who did not know the level of schooling of their father (or mother) (PNAD 1996), nor people under 27 or over 76 years of age on the reference day of PNAD 1996, nor people under 25 or over 74 years of age on the reference day of PNAD 2014.
	The 30's		
	The 40's		
	The 50's		
	The 60's		
	The 70's		
	The 80's		

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