Analysis of the profile of professors in Brazilian Higher Education from 2010 to 2019

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ABSTRACT

Introduction: In recent years, Brazil has experienced a significant increase in higher education, both in terms of the number of institutions and enrolled students. In this context, this growth could be the driving force for changes not only in the profile of students but also in the profile of teachers. **Objective:** This article aims to provide a general overview of the professors in higher education in Brazil in recent years. **Method:** Descriptive analysis of microdata from the Census of Higher Education from 2010 to 2019. **Results:** During this period, there was an increase in the number of teachers, but also an increase in the number of students per teacher. Despite the growth of private higher education, teachers from public institutions became the majority of teachers in the country. One source of this growth in public institutions was the Federal Institutes. In addition, there was minor change in the profile of teachers, who are still predominantly white and with a balance between genders. There was an increase in the average age and level of education, and a decrease in the proportion of teachers who were born in the same state as the institution where they work, which could indicate a decrease in academic endogamy. Finally, the average retention of teachers in the same institution is about 85% from one year to the next, and more than 80% of teachers have only one employment relationship within higher education. **Conclusion:** In Brazil, public institutions have come to host the majority of faculty in higher education. However, the racial profile of the faculty has changed little, not keeping pace with the shifting racial profile of students over recent years.

**KEYWORDS**

Análise do perfil dos professores do Ensino Superior brasileiro de 2010 a 2019

RESUMO
Introdução: Nos últimos anos, o Brasil experimentou um significativo aumento no ensino superior, tanto em termos de quantidade de instituições quanto de estudantes matriculados. Nesse contexto, esse crescimento poderia ser o vetor de mudanças não apenas no perfil dos estudantes, mas também no perfil dos docentes. Objetivo: Este artigo tem como objetivo trazer um panorama geral sobre os professores do ensino superior no Brasil nos últimos anos. Método: Análise descritiva dos microdados do Censo da Educação Superior de 2010 a 2019. Resultados: Durante esse período, houve um aumento no número de docentes, mas também um aumento na quantidade de alunos por professor. Apesar do crescimento do ensino superior privado, os professores de instituições públicas passaram a ser a maioria dos docentes no país. Uma fonte desse crescimento em instituições públicas foram os Institutos Federais. Além disso, houve pouca mudança no perfil dos professores, sendo ainda predominantemente de raça branca e com um equilíbrio entre sexos. Houve um aumento nas médias de idade e de titulação e uma diminuição na proporção de professores que nasceram no mesmo estado da instituição onde trabalham, o que poderia indicar uma diminuição na endogenia acadêmica. Por fim, a permanência dos professores na mesma instituição é, em média, cerca de 85% de um ano para o outro e mais de 80% dos professores têm apenas um vínculo empregatício dentro do ensino superior. Conclusão: As instituições públicas, no Brasil, passaram a abrigar a maioria dos docentes no ensino superior. No entanto, o perfil racial dos docentes pouco se modificou, não acompanhando a mudança no perfil racial dos estudantes ao longo dos últimos anos.

PALAVRAS-CHAVE

Análisis del perfil de los profesores de la Educación Superior brasileña de 2010 a 2019

RESUMEN
Introducción: En los últimos años, Brasil ha experimentado un aumento significativo en la educación superior, tanto en términos de cantidad de instituciones como de estudiantes matriculados. En este contexto, este crecimiento podría ser el motor de cambios no solo en el perfil de los estudiantes, sino también en el perfil de los docentes. Objetivo: Este artículo tiene como objetivo proporcionar una visión general de los profesores en la educación superior en Brasil en los últimos años. Método: Análisis descriptivo de microdatos del Censo de Educación Superior de 2010 a 2019. Resultados: Durante este período, hubo un aumento en el número de docentes, pero también un aumento en la cantidad de estudiantes por profesor. A pesar del crecimiento de la educación superior privada, los profesores de instituciones públicas se convirtieron en la mayoría de los profesores en el país. Una fuente de este crecimiento en instituciones públicas fueron los Institutos Federales. Además, hubo pocos cambios en el perfil de los profesores, que todavía son predominantemente blancos y con un equilibrio entre los géneros. Hubo un aumento en la edad promedio y el nivel educativo, y una disminución en la proporción de profesores que nacieron en el mismo estado de la institución donde trabajan, lo que podría indicar una disminución en la endogamia académica. Finalmente, la retención promedio de profesores en la misma institución es del 85% de un año a otro, y más del 80% de los profesores tienen solo una relación laboral dentro de la educación superior. Conclusión: En Brasil, las instituciones públicas han llegado a albergar la mayoría de los docentes en educación superior. Sin embargo, el perfil racial de los docentes ha cambiado poco, no siguiendo el ritmo del cambio en el perfil racial de los estudiantes en los últimos años.

PALABRAS CLAVE

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1 Introduction

Brazilian higher education has undergone significant expansion in recent years, marked by an increase in both the number of students and the number of higher education institutions (HEIs) (Miranda; De Azevedo, 2020). This growth and its impacts across various dimensions have been the subject of research by several authors. However, a fundamental pillar of higher education receives relatively little attention in the national literature: the professors.

In the international literature, the role of professors in higher education has been the subject of study by various authors. One aspect of this literature is the intellectual leadership of professors within institutions. According to Macfarlane (2011), a professor should possess several qualities associated with their role as an intellectual leader: a model, mentor, advocate, guardian, acquirer, and ambassador. However, new managerialism and performance expectations are reshaping the role of professors (Macfarlane, 2011).

Another aspect of the international literature pertains to the changing role of professors in current times. In higher education, there are several factors influencing the role of professors. On one hand, students are increasingly viewing higher education as consumers (Tomlinson, 2018). On the other hand, there is a growing culture of pressure for publications among professors, which has been present since the early stages of their careers and is accepted as a "fact of life," even if at least partially self-imposed (Waaijer, 2018). In Australia, in response to this challenging academic scenario, a phenomenon of "zombification" of professors has been observed as a form of passive resistance and survival. Professors minimize their academic involvement, adhering to the letter but not the spirit of the academic routine (Ryan, 2012). Berg and Seeber (2018) define the 'corporate university' as an adversary to be combatted through a movement called "Slow Professors." Applying the principles of the Slow movement, originating from the culinary field, to professional practice is an effective means of controlling the pace of work and preserving humanistic education (Berg; Seeber, 2018).

In Brazil, the literature on university professors addresses various aspects. Authors such as Souza and Mendonça (2009) and Sanchez et al. (2019) focus on the quality of life of professors. Vieira and Schneiker (2021) relate student performance in the National Student Exam (ENADE) to the profile of the faculty. A crucial factor in the career of a higher education professor is the production and dissemination of knowledge through publications in scientific journals. A significant portion of the pressure for publications is related to the training of professors. According to Vosgerau, Orlando, and Meyer (2017), the evaluation system of CAPES for the training of higher education faculty privileges the quantity of publications, contributing to the perpetuation of insufficient training in didactics and pedagogy. It is assumed that the training as a researcher, following the logic of academic productivity, is sufficient to train the professor and the intellectual (Vosgerau; Orlando; Meyer, 2017). Additionally, we witnessed the growth of higher education, with impacts on the working conditions of professors (Broch; Breschiliare; Barbosa-Rinaldi, 2020). In the case of public higher education institutions, there was an expansion without the necessary budgetary counterpart, leading to the precariousness of teaching work in Brazil (Leda; Mancebo, 2009).
The precariousness of teaching work in higher education is a topic explored by several authors, such as Bosi (2007) and Reis and Cecílio (2014). From this perspective, Distance Education (DE) has become a pathway to institutionalize precarity. For instance, the Open University of Brazil (UAB) subcontracts its main agents (tutors) through grants, without employment contracts or labor rights (Pereira, 2017). These phenomena contribute to the "Uberization" of teaching work, characterized by professors delivering classes unrelated to their background, supported by standardized materials, under precarious contracts, and expected to be available to teach any subject, akin to an "on-demand" professor (Venco, 2019).

Locatelli (2017) provides an overview of teaching work in Brazilian higher education from 2003 to 2013, outlining the evolution of faculty during that period. This article advances the discussion on Brazilian higher education faculty by presenting a detailed descriptive profile of professors from 2010 to 2019. Thus, it offers insights into the socio-demographic profile of faculty, their relationship with higher education institutions (HEIs), and the variations that occurred over this decade.

2 Data and Methodology

This article is based on the microdata from the Higher Education Census (INEP, 2020). This census is conducted annually and contains comprehensive information about all faculty in higher education. The data from the censuses from 2010 to 2019 will be utilized. The 2010 census was the first to provide microdata, and the 2019 census was the last with this data available. The dataset encompasses a diverse array of variables, including age, race, gender, academic qualifications, and employment status of faculty, as well as institutional and student-related information.

The method adopted in this study involves an exploratory analysis, characterized by the computation of response proportions and their evolution from 2010 to 2019. The primary objective of this approach is to establish a comprehensive understanding of the composition of faculty within the landscape of Brazilian higher education. Alongside the descriptive profiling of faculty members, the study also delves into aspects of faculty work, such as the enumeration of employment contracts faculty hold with HEIs and the proportion of faculty within each HEI who sustain their employment status from one academic year to the subsequent.

3 Results

3.1 Overview

The first piece of information to be presented is the evolution of the number of professors in higher education in Brazil, as depicted in the following Figure 1.
The number of professors increased from 2010 until 2015, and from 2016 onwards, it stabilized at around 350,000 professors. However, this quantity needs to be evaluated in relation to the number of students. In Figure 2 below, the evolution of the student-to-professor ratio throughout the period is depicted.

Despite the expansion in the number of professors, the student-to-professor ratio showed an upward trend until 2017, stabilizing at around 23 students per professor. In other words, while the number of professors was increasing, the number of students was growing even more.

For a better understanding of this phenomenon, Figure 3 illustrates the evolution of this ratio by type of academic organization of the HEI.
The highest average number of students per professor occurs in University Centers, increasing from an average of about 25 students per professor in 2010 to approximately 40 students per professor in 2019. An important point to note is that professors at Federal Institutes (IF) and CEFET also teach at the high school and technical levels, which is not considered in calculating the student-to-professor ratio (which would certainly increase this number).

Another way to observe this phenomenon is shown in the following Figure 4, where the same evolution is disaggregated according to the administrative category of HEIs.
Figure 4. Evolution of the student-to-professor ratio by administrative category

It is evident the growth in the number of students per professor in For-Profit HEIs, which rose from an average of about 25 students per professor to approximately 40 students per professor. Following are the Non-Profit Private HEIs, which increased from about 20 students per professor to around 25 students per professor. Municipal and State Public HEIs maintained their averages stable throughout the observed period. Conversely, Federal Public HEIs showed a downward trend. These results clearly indicate a trend in Private HEIs towards an increase in the number of students per professor, reaching around 40 students per professor.

To understand the growth in the number of faculty members, Figure 5 illustrates the evolution of the proportion of professors in each administrative category.
There is a clear growth in the proportion of professors in public HEIs. The sum of the proportions of professors from Federal, State, and Municipal Public HEIs exceeded 50% in 2019. These results demonstrate that, although the increase in the number of students in higher education occurred in private HEIs, the expansion of the quantity of professors took place in public HEIs.

In addition to the administrative category, Figure 6 below presents the evolution of the proportion of professors by type of academic organization of the HEI.
Figure 6. Evolution of the proportion of professors by Academic Organization

Despite the growth in the proportion of professors in federal public institutions, the proportion of professors in universities increased only slightly, from around 56% to approximately 58%. There was an increase in the proportion of professors in Federal Institutes (IF), from about 2.5% in 2010 to around 7% in 2019, and a decrease in the proportion of professors in Colleges, from about 31% in 2010 to approximately 20% in 2019. In other words, the increase in professors in public HEIs originates from the Federal Institutes (IFs).

3.2 Sociodemographic profile

Given the growth in the number of professors in higher education, it is necessary to understand the profile of these faculty members. Figure 7 below presents the evolution of the proportion of professors by gender.
The proportion between male and female professors remains stable during the analyzed period, with male professors slightly outnumbering females, making up approximately 54% of the total.

Regarding the distribution by age group of professors, this evolution of the distribution is shown in Figure 8 below.
Despite the growth in the number of professors, which could indicate the entry of younger individuals into the profession, there is a decline in the proportion of professors in the 18 to 30-year age range during the analyzed period. This proportion decreased from approximately 11% in 2010 to 7% in 2019. The proportion of professors in the 30 to 55-year age range fluctuated from 73% to 74% during the analyzed period. On the other hand, the proportion of professors in the 56 years or older age range increased from 15% to 18%.

In Figure 9 below, the proportion of professors by race is presented.

**Figure 9.** Evolution of the proportion of professors by race

![Bar chart](image)

Source: Own elaboration based on higher education microdata

There was a decrease in the proportion of professors with no information about race from 2010 to 2019. Despite the increase in the proportion of brown race professors, from about 17% to approximately 20%, and a slight growth in the proportion of black race professors from 2.13% to 2.88%, the vast majority of professors are white, despite a reduction from 80% to 75% during the observed period.

Regarding the education level of the professors, the evolution of the proportion by educational level is shown in Figure 10 below.
During the observed period, there was a decrease in the proportion of professors with only a Bachelor's degree and professors with a Specialization, and an increase in the proportion of professors with a Doctorate. The proportion of professors with a doctorate in HEIs increased from less than 30% in 2010 to nearly 50% in 2019.

Lastly, in the sociodemographic analysis of professors, it is possible to evaluate whether a professor is from the same state (UF) as the HEI to which they are affiliated. In other words, whether the professors stay in the states where they were born or if there is regional mobility. Figure 11 illustrates the evolution of the proportion of professors who are in the same state (UF) by region of Brazil (North, Northeast, Midwest, Southeast, South).
The proportion of professors from the same state (UF) as the HEI showed a downward trend. HEIs located in the states of the North and Midwest regions had the lowest proportion of professors from the same state, about 40%. On the other hand, the states in the Southeast region had the highest proportion of professors from the same state, around 60%.

3.3 Employment Situation

In addition to analyzing the quantity of higher education professors and their sociodemographic profile, it is crucial to understand the employment situation of these professors. Figure 12 below presents the evolution of the proportion of professor by type of employment contract.

![Figure 12. Evolution of the proportion of professors by employment contract](image)

Source: Own elaboration based on higher education microdata

There was an increase in the proportion of professors with exclusive dedication, from 27% to 36%, and a decrease in the proportion of hourly professor from 30% to 16%. These results are consistent with the increase in professors in higher education originating from public IES.

The breakdown of the proportion of professors with a full-time contract, both with exclusive dedication or not, by type of academic organization, is presented in Figure 13 below.
While federal public HEIs have approximately 90% of their faculty on a full-time basis, and state public HEIs have around 80%, in other HEIs, less than 40% of the faculty have a full-time contract.

As not all professors have exclusive or full-time contracts, the evolution of professors by the number of affiliations with HEIs is shown in Figure 14 below.

**Figure 13.** The proportion of full-time professors by type of academic organization

**Figure 14.** Evolution of the proportion of professors by number of affiliations

Source: Own elaboration based on higher education microdata
There was an increase in the proportion of professors with only one affiliation, from 86% to 90%. However, it's important to note that only the affiliations of professors with HEIs are considered, and it's possible that some professors also have employment affiliations with organizations other than HEIs (private companies, public agencies, among others). In other words, the proportion of 10% of faculty with more than one employment affiliation may be underestimated and higher.

In addition to the number of affiliations, the retention of faculty in an HEI is a matter of great importance. To evaluate this retention, a comparison was made from one year to the next to see if the professor remains affiliated with the HEI. However, in 2018, the identification code for professors in the microdata changed, making it impossible to continue the comparison from that year onwards. Therefore, the evaluation is done up to the year 2016 (evaluating how many professors from 2016 are no longer in the same HEI in 2017). In Figure 15, we have the evolution of the proportion of professors who do not remain in the same HEI in the following year.

Figure 15. Professor turnover

The proportion remains stable throughout most of the period, with approximately 15% of professors leaving the HEI from one year to the next. The exception occurs in 2016 when 20% of professors from that year did not remain in the HEI in 2017. However, this turnover of professors varies by type of HEI. In Figure 16 below, we have the breakdown by the administrative category of the HEI.
As expected, the highest turnover occurs in For-Profit Private HEIs, where over 20% of the professors left from one year to the next. With this level of turnover, For-Profit Private HEIs would change their entire faculty every 5 years. The lowest turnover is observed in Public Federal HEIs, with a rate of around 10%, implying a change in the faculty every 10 years.

In Figure 17, the proportion of professors leaving is shown, broken down by the academic organization of the HEI.

Source: Own elaboration based on higher education microdata
The lowest turnover occurred in universities, while the highest turnover was observed in colleges. The second highest exit rate was in university centers. Academic organization is associated with administrative category, where Public HEIs, which include universities, had the lowest turnover, and For-Profit Private HEIs, which include colleges and university centers, had the highest turnover.

In addition to HEI characteristics, faculty turnover may be related to individual characteristics of the professors. In Figure 18 below, faculty turnover is displayed by gender.

![Figure 18. Professor turnover by gender](image)

Source: Own elaboration based on higher education microdata

The turnover rates for both sexes are similar and followed the same trend during the analyzed period. However, throughout this period, turnover among females was consistently slightly higher than that among males.
The turnover of professors was highest for black and brown individuals, with these two groups alternating in the lead in this category. The exception occurred in 2012 and 2013 when the group of indigenous professors had the highest turnover. On the other hand, the lowest turnover during the analyzed period was observed among professors of Asian descent (yellow).

There was a clear difference in the turnover of professors based on their academic qualifications. The lower the qualifications, the higher the turnover from one year to the next. This information is related to the fact that professors in Public Higher Education Institutions (HEIs) with Exclusive Dedication typically hold a doctoral degree.
There seem to be three distinct levels of turnover. The lowest level comprises professors with exclusive dedication. Professors with full dedication but without exclusivity showed a turnover rate similar to that of part-time professors. The highest level of turnover was among hourly professors, with over 20% of professors leaving from one year to the next, reaching 30% in the last observation.

4 Conclusion

The purpose of this article was to present a detailed descriptive profile of higher education professors in Brazil from 2010 to 2019, analyzing their sociodemographic profile, their relationships with higher education institutions (HEIs), and the variations that occurred over these 10 years.

Among the findings, the first relevant fact is the growth in the number of professors in higher education. Public HEIs were the focus of this increase, especially the Federal Institutes, despite the growth in the number of students in private HEIs during the same period. At the end of the analyzed period, professors from public HEIs came to represent more than 50% of the total number of professors in the country. As a result of this phenomenon, the average ratio of students per professor in Brazilian higher education increased over the period. This is mainly due to the increase in the number of students in private HEIs, without a corresponding increase in the number of professors. While in For-Profit Private HEIs, the number of students per professor increased from 30 to 40, in Public HEIs, this number fluctuated below 15. This indicates that For-Profit Private HEIs seek to maximize the workload of professors, and this quantity of 40 students per professor is possibly related to the maximum capacity of classrooms. This scenario tends to worsen with the oligopolies in higher education (Chaves, 2010) and their continuous pursuit of profits (Gaspar; Fernandes, 2014). The increase in the number of students in the classroom, if not planned and structured adequately, can lead to a decline in the quality of education (Mello, 2015), as well as exhaust professors in higher
education (Sousa; Mendonça, 2009).

Regarding the sociodemographic profile of professors, there was a balance between male and female genders. However, there is a significant disparity regarding race. During the analyzed period, there was a slight increase in the number of black and brown professors. Although there has been recent progress in the participation of black and brown students in the student body, thanks to the implementation of affirmative action for higher education in 2012 (Senkevicius; Mello, 2019), this same progression is not observed in the profile of the teaching staff. As pointed out by Carrascosa, cited in Dantas (2018), the ethnic-racial structure of the university remains predominantly composed of white men at the top of the hierarchy, followed by a predominantly white teaching staff, and administrative staff with a hybrid ethnic-racial composition. Lastly, the student body has seen an increase in the representation of black students since the implementation of quota policies. At the base of the university pyramid are outsourced workers, predominantly black women with low income.

This predominance of white professors in Brazilian higher education was also reported by Ferreira, Teixeira, and Ferreira (2022). Furthermore, despite the increase in the number of professors, the proportion of older professors (56 years or older) increased during the period. This may indicate that a teaching career in higher education is becoming more demanding, requiring more preparation time and studies for those who wish to enter. Along the same lines, there was an increase in the proportion of professors with a doctoral degree over the analyzed period. Another possible explanation for this phenomenon could be the pursuit, in academia, of a better quality of life and additional income (Bouzada; Kilimnik; De Oliveira, 2012), by individuals who already have a career outside the academic world.

In terms of the relationship between professors and HEIs, an important factor to consider is academic endogeneity, where doctoral candidates are hired by public universities after completing their studies (Pelegriini; França, 2021). During the analyzed period, there was a decrease in the proportion of professors working in HEIs in the same federal unit where they were born. Despite the growth in the number of professors in Brazilian higher education, changes in their profile were minor. Another relevant aspect to consider is the situation in which a professor begins their career at one HEI and later transfers to the institution where they completed their undergraduate and/or postgraduate studies (De Siqueira; Alves, 2016), a phenomenon described by Horta (2013) as the 'silver cord'. It is worth noting that there is evidence in the literature of a negative relationship between endogeneity and the evaluation of postgraduate programs carried out by CAPES (Barbora et al., 2018).

Regarding the precarization of teaching work, although over 85% of professors had only one employment relationship with an HEI during the analyzed period, it would be necessary to assess whether the professors have other employment relationships outside the academic environment. This analysis was not possible in this study. Additionally, professor turnover was evaluated, and although there is a certain stability in the proportion of professors leaving the profession from one year to the next, an increase can be observed in the last period analyzed (from 2016 to 2017). This turnover may be related to factors such as the psychological well-
being of professors, as pointed out by Polizzi and Claro (2019), as well as the burnout phenomenon, as discussed by Carlotto (2004) and Costa et al. (2013).

The quality of higher education depends directly on the quality of university professors, both for research and innovation in their knowledge areas and to assist in the development of critical thinking and problem-solving skills in students, as well as engaging with the community and social environment they are part of. Understanding the profile of professors and their recent evolution is essential for the debate and development of higher education in Brazil. However, according to Locatelli (2017), the working conditions of professors are strongly impacted by the transformations in the world of work. This article used data prior to the Covid-19 pandemic, which brought new challenges and transformations to education, such as hybrid learning (De Oliveira et al., 2021) and new educational practices that directly affect professors' routines (De Araujo et al., 2020). In a scenario of increasingly rapid changes, precarious working conditions and contractual and salary inequalities (Gomes; Cruz, 2023) could significantly increase.

In summary, from 2010 to 2019, the number of Brazilian higher education professors increased significantly, but the number of students per professor also increased. Despite the growth of the private sector in higher education, professors in public institutions came to represent the majority, with a highlight on Federal Institutes. The profile of professors remains predominantly white, although there is gender equity. There was an increase in the average age and level of education. The proportion of professors born in the same state where they work decreased, suggesting a reduction in academic endogeneity. Finally, the retention rate of professors in the same institution is approximately 85%, and over 80% of them have only one employment relationship in higher education. Despite substantial changes in Brazilian higher education, the profile of professors has seen few modifications.

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