

**HIERARCHICAL SEGREGATION IN THE FEDERAL NETWORK OF
PROFESSIONAL, SCIENTIFIC AND TECHNOLOGICAL EDUCATION**

**SEGREGAÇÃO HIERÁRQUICA NA REDE FEDERAL DE EDUCAÇÃO
PROFISSIONAL, CIENTÍFICA E TECNOLÓGICA**

**SEGREGACIÓN JERÁRQUICA EN LA REDE FEDERAL DE EDUCACIÓN
PROFESIONAL, CIENTÍFICA Y TECNOLÓGICA**



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ABSTRACT: This work aims to analyze gender inequality, specifically the mechanism of hierarchical or vertical segregation in the occupation of positions and functions of leaders in the Federal Network of Professional, Scientific, and Technological Education, from data available on the Nilo Peçanha Platform in 2023. The research used qualitative and quantitative approaches, selecting the available data of the public servants, about age, gender, education, and time of service, to analyze the profile of the managers who work in the mentioned educational network. The study indicated that, in the occupation of management positions - Rectors, Pro-Rectors, and General Directors - there is a female under-representation, even when the women are endowed with productive characteristics identical or superior to those of their male counterparts - thus pointing out, that also in this area of federal public administration, the consolidation of gender inequalities and the greater professional advancement of men as one moves up the hierarchical ladder.

KEYWORDS: Hierarchical segregation. Federal Network of Professional, Scientific and Technological Education.

RESUMO: *O trabalho tem por objetivo analisar a desigualdade de gênero, especificamente o mecanismo da segregação hierárquica ou vertical na ocupação dos cargos e funções de dirigentes da Rede Federal de Educação Profissional, Científica e Tecnológica a partir de dados disponíveis na Plataforma Nilo Peçanha, do ano de 2023. A pesquisa utilizou abordagens qualitativas e quantitativas, selecionando os dados disponíveis dos(as) servidores(as), quais sejam, idade, sexo, escolaridade e tempo de serviço, para analisar o perfil dos dirigentes da referida rede de ensino. O estudo indicou que, na ocupação dos cargos de dirigentes, Reitores (as), Pró-Reitores(as) e Diretores(as) Gerais, existe uma sub-representação feminina, mesmo quando as mulheres são dotadas de características produtivas idênticas ou superiores às de seus congêneres do sexo masculino, apontando, assim, também nesta área da administração pública federal, a consolidação das desigualdades de gênero e a maior ascensão profissional do homem na medida em que se sobe a escala hierárquica.*

PALAVRAS-CHAVE: Segregação hierárquica. Rede Federal de Educação Profissional, Científica e Tecnológica.

RESUMEN: *El trabajo tiene por objetivo analizar la desigualdad de género, específicamente el mecanismo de la segregación jerárquica o vertical en la ocupación de los cargos y funciones de dirigentes de la Rede Federal de Educación Profesional, Científica y Tecnológica a partir de datos disponibles en la Plataforma Nilo Peçanha, del año 2023. La investigación utilizó enfoques cualitativos y cuantitativos, seleccionando los datos disponibles de los (as) servidores (as), cuales sean, edad, sexo, escolaridad y tiempo de servicio, para analizar el perfil de los dirigentes de dicha red de enseñanza. El estudio indicó que, en la ocupación de los cargos de dirigentes - Rectores (as), Pro-rectores (as) y Directores (as) – existe una sub-representación femenina, incluso cuando las mujeres están dotadas de características productivas idénticas o superiores a las de sus congêneres del sexo masculino - apuntando, así, también en esta área de la administración pública federal, la consolidación de las desigualdades de género y la mayor ascensión profesional del hombre a medida que se eleva a escala jerárquica.*

PALABRAS CLAVE: Segregación jerárquica. Rede Federal de Educación Profesional, Científica y Tecnológica.

Introduction

This study aims to analyze the occupation of leadership positions by professionals within the Federal Network of Professional, Scientific, and Technological Education (RFEPCT), in order to examine gender inequalities in the contemporary workplace, considering the changes and continuities in social and economic realities.

There has been an undeniable increase in educational attainment and the growing presence and participation of women in the workforce. As a result, discussions and struggles for gender equality have become a permanent agenda within the feminist movement. Academic focus on gender inequality dates back to the 1960s, when the feminist movement sought to expose political, legal, economic, and social segregation against women (Saboya, 2013).

For a better understanding, we turn to Scott's (1995, p. 86, our translation) concept of gender: "Gender is a constitutive element of social relationships based on perceived differences between the sexes and [...] is a primary way of signifying power relations." In this sense, Saffioti describes this power relation as a sexual or gender grammar, which highlights a social hierarchy:

The sexual or gender grammar, which regulates relations between men and women, relations among men, and relations among women, specifies socially acceptable conduct regarding sex. Gender is a social construct defining being a woman and a man. It is from the notions of woman and man that norms arise that allow the transformation of a baby into a female or male being. Anatomical sex serves as a statistical reference, but nothing prevents a baby with female genitalia from being raised as male and vice versa (Saffioti, 1997, p. 40, our translation).

This concept of gender undermines the idea of a natural order of the sexes, deconstructing strictly biological arguments to justify social and cultural constructions maintained by a system of hierarchy in social interactions between men and women. A system characterized by male supremacy, as Bourdieu establishes:

Moreover, while it is true that we find women at all levels of social space, their opportunities for access (their rates of representation) decrease as they reach rarer and more elevated positions... Thus, at each level, despite the effects of an over-selection, formal equality between men and women tends to disguise the fact that, all things being equal, women always occupy the less favored positions (Bourdieu, 2020, p. 151, our translation).

The French sociologist highlights gender inequality and the phenomenon of its concealment through the existence of formal equality. This can be fully observed in the Brazilian legal system, which proclaims and guarantees equality in the first clause of Article 5 of the Federal Constitution of 1988, yet suffers repeated violations in reality.

Bourdieu, from the theoretical conception of male domination, defined and characterized this form of gender inequality in the occupation of leadership positions: "The definition of a position, especially one of authority, includes all sorts of capacities and skills that are sexually connoted: if so many positions are hardly occupied by women, it is because they are custom-made for men" (Bourdieu, 2020, p. 106, our translation).

In 1987, Morrison, White, and Van Velsor defined the "glass ceiling" as the barrier that exists at the top of the career ladder, preventing women from reaching the highest positions—a barrier so subtle that it is invisible to the vast majority of people (Morrison; White; Van Velsor, 1987 apud Gallego-Morón e Matus-López, 2018, p. 210). However, it is still strong enough to prevent women from ascending to top-tier hierarchical positions, representing imperceptible yet potent social mechanisms.

In 2018, Gallego-Morón and Matus-López analyzed the theoretical advances and scientific evidence on the glass ceiling in Spanish universities to contribute to a reflection on the diagnosis and causes of this phenomenon, based on the analysis of the functional progression of faculty members. The authors highlighted aspects such as the invisibility of the problem, low acceptance, and refusal to adopt affirmative action measures. It is worth noting that almost all the reviewed literature points to the low participation of women in higher positions, despite education being considered a feminized field.

Casi la totalidad de la bibliografía revisada coincide al señalar la feminización de la educación, comparándolo con la baja participación de las mujeres en los puestos más altos de la categoría profesional, la cátedra, así como en los órganos de dirección (Gallego-Morón; Matus-López, 2018, p. 215).

In Brazil, researcher Daniela Verzola Vaz, a significant reference in the study of this topic, presented a study in 2013 on the mechanism of vertical (or hierarchical) segregation in the public sector. Vaz conducted a survey of other studies that addressed vertical segregation and validated the use of the term "glass ceiling" in reference to processes that develop in the workplace, favoring the professional advancement of men while consolidating the maintenance of women in more subordinate positions.

Acco, Bernardes, and Moura (1998) consider that this situation of unequal participation of women in various hierarchical levels of public administration is not unique to the Brazilian reality, being equally observed in countries such as Great Britain, the United States, Australia, and Canada.

Another aspect that should be considered is the conception of the educational system as an extension of the cultural "determinisms" dictated by social classes, resulting in a process of reproduction and inculcation of gender inequalities by the educational system (Bourdieu, 2020, 2014). As Bourdieu established, "the school continues to transmit the assumptions of patriarchal representation, perhaps especially those inscribed in its own hierarchical structures, all sexually connoted" (Bourdieu, 2020, p 142, our translation).

After a thorough literature review on the topic, it was identified that studies on gender inequalities in academic careers predominantly focused on public universities, neglecting the situation of Federal Institutes and their respective network (RFEPCT). Therefore, the analysis conducted in this work aims to highlight the lack of parity and, consequently, the absence of equal conditions in accessing leadership positions within the RFEPCT.

To achieve this, we conducted various searches on the *Nilo Peçanha* Platform (PNP⁴), which allows the collection of official statistical data on federal public servants within the Federal Network of Professional, Scientific, and Technological Education. The platform presents data interactively, aiming to enhance transparency for different audiences, institutions, control bodies, the student community, and the press. The personnel management data available on the *Nilo Peçanha* Platform are extracted from the Integrated Personnel Administration System (SIAPE) of federal public servants. The most recent data available are from April 2023, as stated on the PNP.

The methodological approach of this exploratory research is both qualitative and quantitative, as the data from the *Nilo Peçanha* Platform were retrieved, utilized, and analyzed in the context of scientific articles, journals, and books. According to Gatti:

Both approaches can be considered complementary rather than antagonistic, as methods [...] represented by numbers can be very useful in understanding various educational issues. Moreover, the combination of this type of data with data derived from qualitative methodologies can enrich the understanding of events, actions, and processes. Both approaches, however,

⁴According to the description contained in the aforementioned platform, it consists of a virtual environment, which, as of 2018, is the validation and dissemination of official statistics on the Federal Network for Scientific and Technological Professional Education (RFEPCT), and which are monitored by the Secretariat of Professional and Technological Education of the Ministry of Education (SETEC/MEC) (<https://www.gov.br/mec/pt-br/npn>).

require the researcher's reflective effort to make sense of the collected and analyzed material (Gatti, 2004, p. 13, our translation).

In pursuit of this objective, we selected available data on various aspects to analyze the profile of RFEPCT leaders, including age, gender, education level, and years of service. It is important to note that the available query options on the PNP do not provide data on racial identity. This limitation restricts an intersectional analysis that would be highly relevant for a comprehensive approach that intersects gender and race categories. Beyond limiting the analysis, this decision not to extract such data from SIAPE for the PNP reveals a political stance that does not consider it important to reflect accurate race/color information of the employees in personnel management data.

It is also worth mentioning that the available option to query data related to the profile of leaders does not include filters or choices to analyze data from each institution individually. Instead, the data for leaders is presented globally, without specification by Federal Institute. In this search tab, the available information pertains to positions and commissioned functions. Within this data option, the platform offers initial filter selections regarding functions, presented in the following order: acronym, function description, job title, position or function, position type, education level, years of service, gender, age group, career, and permanent position.

The second filter option for this data in this search tab provides the selection of the type of gratified function, presented in the following order: FG-0004, FG-0005, FG-0006, FG-0007, FG-0008, FCC001, CD-001, CD-002, CD-003, CD-004, FG-0001, FG-0002, and FG-0003⁵. Additionally, it is possible to apply three general filter options on the data, allowing it to be presented in graphical form, namely, employment status (active or inactive), gender (male or female), and position or function (commissioned function or leadership position).

⁵ The commissioned functions are characterized by the spelling of FC or FG, followed by the respective number. Management positions are characterized by the spelling CD, followed by the respective number. The numbers correspond in descending order to the hierarchy, referring to the responsibility of the commissioned function or management position, as well as the respective value that will be added to the remuneration of the person occupying the function or management position - the highest being, therefore, defined as 0001.

Hierarchical Segregation in the Federal Network of Professional, Scientific, and Technological Education

In 2008, the Federal Institutes were established through the aggregation/transformation of former professional institutions. According to the creation law, the Institutes are intended to become centers of excellence in the provision of science education in general and applied sciences in particular. They are to qualify as references in supporting the provision of science education in public educational institutions, offering technical training and updating to teachers, as stipulated by Law No. 11.892/08 (Brasil, 2008, art. 6°).

The mentioned legal text amended the Law of Guidelines and Bases of National Education regarding technical professional education. It also highlights that the Institutes are proposed to conduct and stimulate applied research, cultural production, entrepreneurship, cooperativism, and promote the production and transfer of social technologies. Furthermore, they must guide their educational offerings to benefit the consolidation and strengthening of local productive, social, and cultural arrangements, based on mapping the socio-economic and cultural development potential of each Federal Institute (Brasil, 2008).

From 2003 to 2014, there was a significant expansion of the federal technical education network, with the creation of 422 new teaching units, in contrast to the period from 1909 to 2002, during which only 140 units⁶ were established. This expansion reflects a governmental policy, as the country was governed by successive administrations of the same political group, the Workers' Party (PT), during that time.

As of 2019, the Federal Network comprises 38 Federal Institutes, 2 Federal Centers for Technological Education (Cefet), the Federal University of Technology - Paraná (UTFPR), 22 technical schools affiliated with federal universities, and *Colégio Pedro II*. Including the associated campuses of these federal institutions, there are a total of 661 units distributed across the 27 federal units of the country.

To analyze the presence of women in leadership positions within the RFEPCT, it is crucial to begin by comparing the presence of women among the total number of permanent staff members in the RFEPCT. Entry into the federal public service is achieved through public competitive examinations, which are considered more objective, impersonal, and transparent selection methods. This method inherently offers equal access opportunities, which is the initial

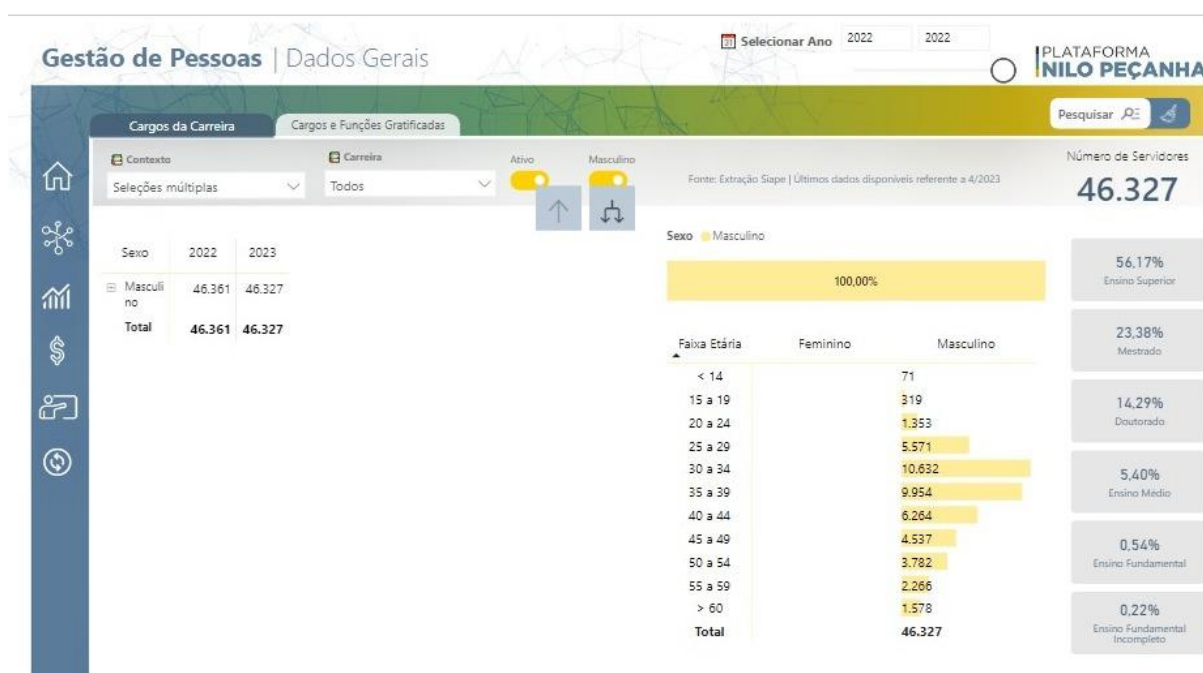
⁶ <http://portal.mec.gov.br/setec-programas-e-acoefs/expansao-da-rede-federal>. Accessed in: 24 July 2023.

condition for occupying these leadership positions, as they are exclusively reserved for career civil servants.

Based on the data collected, we observe a relative gender parity in the number of permanent staff members in the RFEPT. According to data from April 2023 available on the PNP, there are 46,327 male and 37,135 female staff members (see Figures 1 and 2). This means that 55.51% of permanent and active positions are held by men, while 44.49% are occupied by women.

Desse modo, conforme informamos como opção de filtro para escolha de apresentação dos dados, passamos a analisar a composição da escolaridade destes (as) servidores (as) pelo filtro de sexo.

Figure 1 – Screenshot from PNP – Permanent Positions for Male Staff



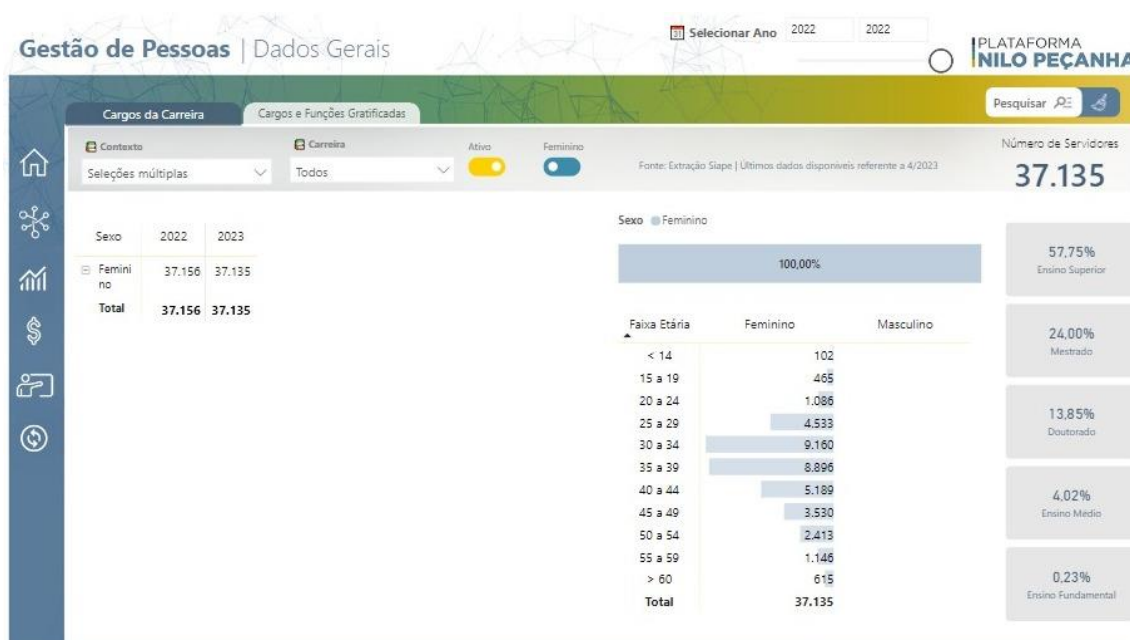
Source: Nilo Peçanha Platform Screen.

Applying the male gender filter (see Figure 1) reveals an age profile predominantly between 25 and 44 years old. Additionally, 56.17% of male staff members have a higher education degree as their highest level of education, while approximately 37.67% hold postgraduate degrees (stricto sensu).

Applying the female gender filter (see Figure 2) shows an age profile predominantly between 30 and 39 years old. The data indicates that 57.75% of female staff members have a

higher education degree as their highest level of education, while approximately 37.85% hold postgraduate degrees (*stricto sensu*).

Figure 2 – Screenshot from PNP – Permanent Positions for Female Staff



Source: Nilo Peçanha Platform Screen.

In this comparison, there are no significant disparities in the numbers, educational qualifications, and ages between male and female staff members. Notably, women have slightly higher academic qualifications, with about two percentage points more holding undergraduate and postgraduate degrees than men. Next, we proceed to analyze the presence of women in leadership positions, which are temporary and exclusively occupied by permanent career staff.

To conduct the analysis of leaders, we used the leadership position filter mentioned in the introduction. Given that there are 13 types of commissioned roles and positions, we restricted our analysis to the concept of leaders as defined by the Law establishing the Federal Institutes (Brasil, 2008), which stipulates in Article 10, § 2º, the organizational structure and composition of the Board of Directors: “The Board of Directors, advisory in nature, shall be composed of the Rector, the Pro-Rectors, and the General Director of each of the campuses that make up the Federal Institute.”

Thus, we used the filters for the type of remunerated position CD-0001, which corresponds to the additional salary for the highest leadership position in the Federal Institutes, the position of Rector. Additionally, we used the filter for the remunerated position CD-0002,

which corresponds to the additional salary for the positions of Pro-Rectors and General Directors, which are immediately below the highest leadership position in the hierarchical scale.

The aforementioned law establishes the selection process and requirements for the position of Rector:

Article 12. Rectors shall be appointed by the President of the Republic for a term of four (4) years, with the possibility of one reappointment, following a consultation process with the school community of the respective Federal Institute, where the votes of the teaching staff, technical-administrative staff, and student body each carry a weight of one-third (1/3).

§ 1. Eligible candidates for the position of Rector must be faculty members from the Permanent Active Staff of any campus within the Federal Institute, provided they have a minimum of five (5) years of service in a federal institution of professional and technological education and meet at least one of the following criteria:

I. Possess a doctoral degree; or

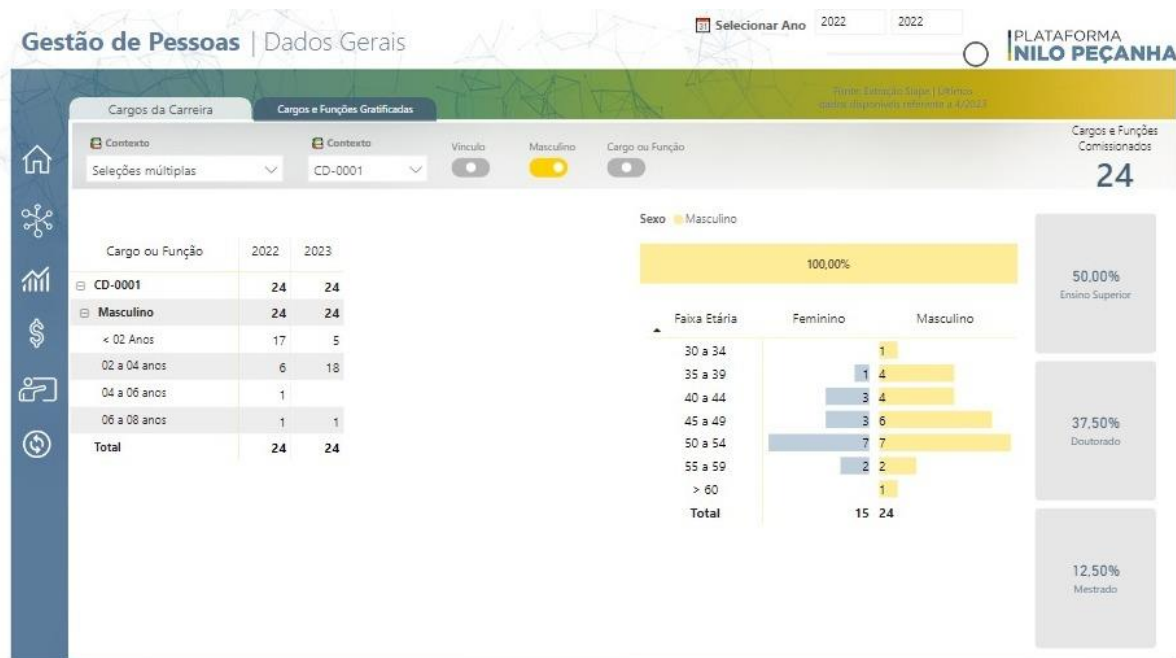
II. Hold positions in either DIV or DV Classes of the Teaching Career in Basic, Technical, and Technological Education, or as an Associate Professor in the Higher Education Teaching Career.

§ 2. The Rector's term ends either upon completion of the term, or earlier due to voluntary or compulsory retirement, resignation, dismissal, or vacancy of the position (Brasil, 2008, our translation).

Thus, according to the collected data, the federal network has 39 leadership positions occupied by 24 male staff members and only 15 female staff members (see Figures 3 and 4). This means that 61.54% of the highest leadership positions in the Federal Institutes are held by men.

According to the data extracted from the PNP (see Figures 3 and 4), we can observe that among the 24 Rectors, the majority have up to two years of service, more than half are between the ages of 45 and 54, and 50% hold postgraduate degrees, exceeding the minimum qualification required for the position. Regarding the women who hold the position of Rector (accounting for 38.46%), most have up to four years of service, half are between 50 and 54 years old, and 53.36% have qualifications above the minimum educational requirement for the position.

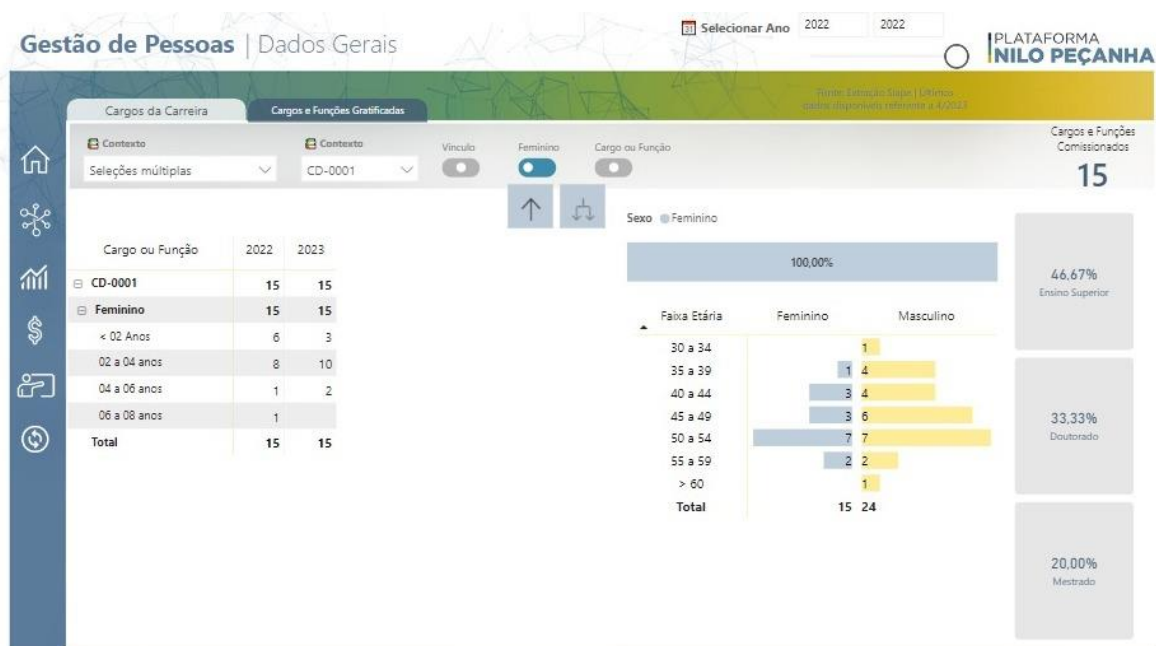
Figure 3 – PNP Screenshot – CD-0001 Positions, Male



Source: Nilo Peçanha Platform Screen.

Here, some significant differences are highlighted in the comparison of data between male and female rectors: men show a lower percentage of academic qualification and reach the highest leadership position with less service time and at a younger age compared to women who hold the position of Rector.

Figure 4 – PNP Screenshot – CD-0001 Positions, Female



Source: Nilo Peçanha Platform Screen.

Continuing with the data collection, we will analyze the occupants of the positions of Vice Chancellors and Campus Directors, which, according to legislation, have equivalent requirements regarding the bond being of influential position and the minimum educational level of higher education:

Article 11, § 1 - Vice Chancellors may be appointed by servers holding a permanent position in the Teaching Career or a permanent position with a higher level in the Technical-Administrative Career of the Plan of Technical-Administrative Positions in Education, provided they have a minimum of 5 (five) years of practical exercise in federal institutions of professional and technological education.

Article 13, § 1 - Candidates for the position of Campus Director may be servers holding a permanent position in the Teaching Career or a permanent position at the higher level of the Technical-Administrative Career of the Plan of Technical-Administrative Positions in Education, provided they have a minimum of 5 (five) years of effective exercise in federal institutions of professional and technological education and that they fit at least one of the following situations:

I - meet the requirements required for candidacy for the position of Rector of the Federal Institute;

II - have a minimum of 2 (two) years of exercise in a management position or function in the institution; or

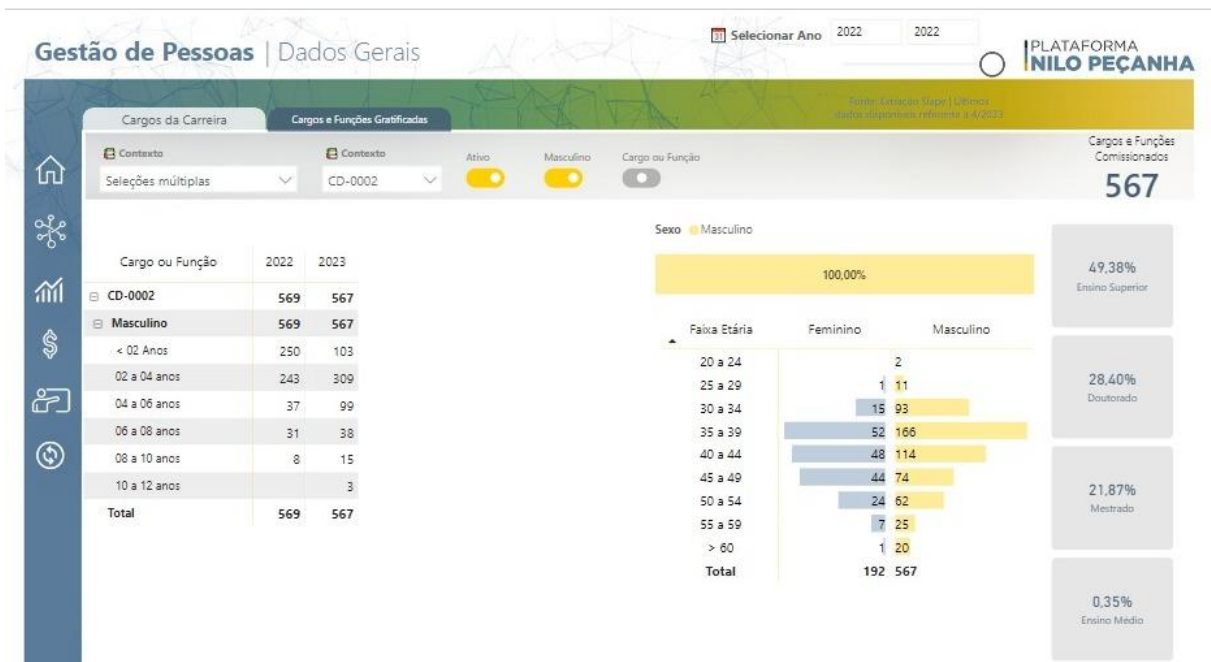
III - have successfully completed a training course for the exercise of management position or function in public administration institutions (Brasil, 2008, our translation).

The occupants of the Vice Chancellor positions are chosen by those in the position of maximum leadership, the Rectors. The positions of Campus Directors must be elected by the community of students, faculty, and administrative technicians of the Campuses, except in the situation of Campuses in the implementation process, since in these cases, the consultation for the position must be conducted after five years of effective operation of the Campus. In this situation, the maximum leader will make the choice, according to Article 13 of Decree No. 6,986/2009.

Thus, according to the data collected, the federal network has 759 positions of these leaders, of which 567 are male and only 192 are female (see Figure 5 and 6). In other words, only 25.30% of the positions of Campus Directors and Vice Chancellors are held by women. The situation of relative parity, previously presented, observed in the total of effective servers, completely disappears when we analyze the occupation of leadership positions.

According to the data shown in Figure 5, most male occupants of these positions are in the age range of 30 to 44 years, have up to four years of service, and 50.27% have a qualification with a *stricto sensu* postgraduate degree.

Figure 5 - Image from PNP - CD-0002 positions, male gender



Source: Nilo Peçanha Platform Screen.

Meanwhile, female occupants are concentrated in the age range of 35 to 49 years, also proportionally with up to four years of service, and show approximately a higher percentage in terms of qualification. That is, 51.04% have a qualification with a stricto sensu postgraduate degree. Thus, the 192 women occupying these leadership positions are older and have better academic qualifications compared to the 567 men holding these positions, with the only equivalent index between genders being the length of service.

Figure 6 - Image from PNP - CD-0002 positions, female gender



Source: Nilo Peçanha Platform Screen.

The data highlight and confirm the difficulty of female ascent to leadership positions within the RFEPCT, specifically to positions such as Rectors, Vice-Rectors, and Campus Directors. According to the analysis of available data, there are no significant differences in academic qualifications and length of service that could justify, for example, under legal requirements, the gender disparity in leadership positions.

We can observe that women in the federal public service sector, particularly in technical and vocational education, face gender-based inequalities due to their presence in various social spaces. In other words, access to public positions does not guarantee equal opportunity to leadership roles.

Regarding the causes of hierarchical segregation, Lombardi's study (2006) identifies several factors explaining aspects of gender inequality in organizations: 1) the implementation of corporate strategies that hinder women's advancement; 2) the existence of informal networks from which women are excluded; 3) the requirement for greater time availability for work, which in some cases complicates balancing professional and family life; and 4) women's resistance to assuming leadership roles in predominantly male environments.

The study conducted in Spanish universities, mentioned in the introductory part, states:

No existe acuerdo en los obstáculos existentes ni en la tipología que se realiza de éstos. El resultado que se obtiene de la revisión es un amplio listado de

causas a distintos niveles (personal, familiar, organizacional y social) que obstaculizan el ascenso de las mujeres, pero sin diferenciar en la importancia de cada una ni en la particularidad de la universidad como entorno diferenciado del mercado de trabajo. Así, las causas terminan siendo más o menos las mismas que se encuentran en los estudios de discriminación de género en el mercado laboral (Gallego-Morón; Matus-López, 2018, p. 222).

According to this study, we can understand that there is no consensus on the distinct causes that explain gender inequality in workplaces, but rather a list of possible causes (personal, familial, organizational, and social), as previously mentioned in Lombardi's study. The causes identified by research on the academic environment are similar to those highlighted in studies on the labor market.

The most recurring barriers mentioned by Spanish female faculty members relate to the difficulty of balancing work, personal, and social life, associated with the existence of co-optation processes within the university system (Gallego-Morón; Matus-López, 2018).

In the same vein, as stated by Biroli (2018, p. 26, our translation): "In the 'public patriarchy,' State and labor market become the dimensions where coercions are organized and institutionalized. New forms of inclusion would be accompanied by renewed forms of oppression and control." In other words, patriarchal relations have expanded beyond the private sphere and permeated public spaces as well, including, as demonstrated in this work, environments considered privileged in terms of equality, transparency of access (through public competitive exams), and academic qualifications of the professional cadre.

Final considerations

We highlight a limitation that prevented intersectional analysis: the need for improvement of the Nilo Peçanha Platform (PNP) by including information on the racial identity of the employees.

It is evident that, in RFEPCT as well, gender parity diminishes as one progresses into leadership positions. Thus, the dominant social role of males prevails, even in privileged knowledge production settings such as federal institutes of education, science, and technology. It is observed that female presence, constituting 44.49% of the total permanent employees, decreases to 38.46% and then to 25.30% of the total leaders, even when women possess identical or superior productive characteristics compared to their male counterparts. This consolidates gender inequalities and professional advancement predominantly for men, both in elected positions and in appointed and removable roles.

Therefore, RFEPECT data reflects a reality consistent with other research and the situation in other areas of Brazilian public administration. Despite nearly equal female representation among permanent employees, there is an underrepresentation of women in leadership positions within federal education institutions. Ultimately, this underrepresentation results in a lack of female participation in spheres of power, decision-making, prestige, and higher remuneration.

This analysis also underscores the need for further in-depth studies on the specific characteristics and causes of gender inequality in the occupancy of leadership positions within RFEPECT.

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