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Equality without Equity: The Gender Pay Gap at the National University of Colombia

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Abstract

The National University of Colombia boasts a clear and egalitarian salary regime for its academic staff. Apart from rules concerning maternity and paternity leaves, which follow national Colombian legislation, the Academic Personal Statute is completely free of gender-based norms. Salaries are assigned through a points system that considers training level, productivity, and academic rank. With this in mind, one might expect to find egalitarian male and female salary conditions free of the gender-related gaps existing in other, more arbitrary private work environments. In this article, we present the results of a variance decomposition analysis of the gross salaries of all full-time professors and report the existence of an unadjusted gender pay gap of 0.12 and adjusted or unexplained gaps of 0.07-0.09 obtained through a Mincer earnings regression and a Blinder-Oaxaca decomposition. Partial correlations between these gaps and the different factors that come into play are examined and analyzed. The high impact of professors' research track record on their salaries appears as the main contribution to the gender differences. It seems plausible that the crucial need for time to dedicate to research opens the window to the patriarchal society to permeate the otherwise egalitarian salary regime of the University, especially for the highest range of salaries corresponding mainly to male full professors who are very active in research.

Keywords: Gender Pay Gap, Blinder-Oaxaca Decomposition, Mincer Earnings Regression, Gender Equity, Data Analysis, Wage Structure, Wage Differentials, Higher Education

JEL Codes: I23, C2, C55, J16, J31

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1 Introduction

Colombia is a very unequal country. According to the *World Inequality Database*, 2020, the richest 10 % holds a 48.9 % income share, while the poorest 50 % holds only 12.0 %, placing Colombia among the most unequal countries in the world. Its 2019 Gini coefficient stands at 0.53, second only to Brazil in Latin America, itself one of the most unequal regions of the world (World Bank, 2021).

In addition to this general inequality, Colombian society remains very sexist, leading to the existence of a sizeable gender pay gap (GPG). According to a recent study based on data provided by the National Administrative Department of Statistics (Departamento Administrativo Nacional de Estadística, DANE), the global GPG in Colombia stands at 0.20 (Cerquera-Losada, Arias-Barrera, & Prada-Hernández, 2019), while a study performed by private firms for the Inter-American Development Bank found a value of 0.17 (Pombo et al., 2019). (See Appendix 6.1 for the formal definition of GPG that we use throughout the paper). Villamil Fajardo, 2015 shows that, at the same educational level, the remuneration received by women is significantly lower, which shows up as large fluctuations in GPG for different training levels; 0.118 for university graduates, 0.220 for workers with a master's degree, and 0.103 for those with a doctorate.

These gaps are similar to those found elsewhere. For instance, Blau & Kahn, 2017 report a GPG of about 0.2 for the United States in 2014, while in Europe the GPG varies from 0.06 in Portugal to 0.3 in the UK (Rubery, Grimshaw, & Figueiredo, 2005). In Brazil, Madalozzo, 2010 finds a GPG of around 0.15.

The purpose of this work is to show how structural inequalities in Colombian society may percolate even the most egalitarian environments, creating a GPG where none was to be expected. As we argue in section *3.1*, the National University of Colombia (Universidad Nacional de Colombia, UNC) provides a prime example of such an egalitarian environment.

UNC is a public research university, with several campuses across Colombia. Founded in 1867, it is one of the largest universities in the country, with more than 54 000 students and around 3100 part-time and full-time professors (*UNAL en un vistazo*, 2020). UNC occupies a special place in the Colombian psyche and has played a key role throughout its history. It consistently ranks among the top universities in Latin America according to the QS University Rankings (*QS Latin American University Rankings 2020*, 2020).

The UNC mandate is framed by the Colombian Constitution of 1991, which guarantees equal rights and opportunities for men and women and the prohibition of any kind of gender discrimination. Adhering to it, the current UNC Statute of Academic Staff (Consejo Superior Universitario, 2013a) is based on the principles of academic excellence, autonomy, teaching liberty, equity, and trust. Regarding the principle of equity, it is stated that the academic staff will receive from the institution a citizen treatment without preferences or discrimination based on social, economic, political, gender, cultural, ideological or religious reasons. Moreover, in an effort to transform the institutional gender culture, UNC approved the country's first university gender-equity regulations (Consejo Superior Universitario, 2012), which institutionalized the gender perspective and created the Gender Affairs Observatory to ensure the development of and compliance with the equity policy.

In this work, we unveil the existence of a GPG among full-time UNC professors and perform a variance decomposition analysis that works with partial correlations between the salary differences and the various factors that come into play. We reckon the "unadjusted" GPG, computed directly from the salary data, the "adjusted" GPG, that isolates the effect of gender from confounding variables such as training level, academic rank, and area of knowledge by means of a Mincer earnings regression, and the "unexplained" GPG obtained from a Blinder–Oaxaca decomposition analysis, which breaks down outcomes that can be attributed to gender differ-

ences in the explanatory variables, and outcomes attributable to differential treatment of male and female professors.

Previous studies reported unadjusted GPGs of 0.11 and 0.13 at the University of Valencia (Universitat de València, Spain) and the University of the Basque Country (Universidad del País Vasco, Spain), respectively, with more heterogeneous regulations and different kinds of contracts for the professors than at UNC (Jabbaz, Samper-Gras, & Díaz, 2019; *Presupuestos Con Enfoque de género En La UPV/EHU (2011-2016)*, 2015). Here, we take advantage of the size of UNC to restrict our study to those professors working full time, and therefore, to find a large group of professors under the same statute. In this context, UNC provides a unique ground to study the GPG within a highly-educated group of people under a completely egalitarian regulation.

There is an open debate about the reasons for the existence of a gender wage gap. For example, "horizontal segregation," meaning that men and women tend to form groups in certain disciplines or careers, with traditionally lower salaries for the latter (Johnson, 2014; Zuluaga Sánchez et al., 2019), and private work contracts where the salary negotiations might be skewed against women for cultural reasons (Cerquera-Losada, Arias-Barrera, & Prada-Hernández, 2019; Fernández, 2006; Galvis, 2010) are two oft-cited phenomena linked to the gender pay gap.

Also, in academic environments, the assignment of tasks usually leaves women with the kind of work (administrative duties, mentoring students, etc.) that does not contribute to promotion or increased research productivity and hence does not raise their salaries (Guarino & Borden, 2017; Mitchell & Hesli, 2013). Other studies mention the unpaid work performed by women at home, that decreases the possibility of working additional paid hours, as the main factor preventing women from accessing certain stimuli and promotions in work trajectories (Fernández, 2006; Misra, Lundquist, & Templer, 2012; Quintero, 2016). A value of 17 % less time devoted to paid work by women and *four to five times* the time dedicated to unpaid work has been recently reported in Colombia (Pombo et al., 2019). Time is hardly anywhere more of the essence than in academia, where it becomes a necessary requirement to developing ideas and projects, performing research stays, joining research networks or attending meetings and congresses where the state of the art of the different fields is discussed and new collaborations are usually formed.

The article is structured as follows. In section *2* we present the general data for the academic staff at UNC, and analyze the GPG among professors taking into account training level, academic rank, and areas of knowledge. In particular, in section *2.2* we derive the adjusted GPG from a Mincer earnings regression and in section *2.3* we estimate the unexplained GPG by means of a Blinder–Oaxaca decomposition analysis. In section *3* we analyze the sources of the inequity, stressing the influence of research productivity and the underrepresentation of women in decision-making positions. Finally, in section *4* we present the conclusions of this work.

2 The Gender Pay Gap at UNC

2.1 Global Data

Our dataset has detailed information for every professor affiliated to UNC in 2015. We have restricted our attention to the 862 professors with full-time ("tiempo completo," TC) and the 1418 professors with exclusive ("dedicación exclusiva," DE) commitments, for a grand total of 2280 professors. These different commitments reflect an internal distinction made by UNC and perhaps not frequently encountered at other universities. Both TC and DE professors work full time at UNC, but DE professors are required by law to work *exclusively* at UNC, which compensates them with a 22 % extra salary in comparison with TC professors, who do not have this restriction.

In this section we focus on the distribution by seat, sex, commitment, training level, and academic rank. Please see Table 4 in Appendix 6.5 for the summary statistics of other numerical variables present in our data.

UNC's claim to be a *national* university is supported by the existence of seven different seats: Bogotá, Medellín, Manizales, Palmira, Arauca, Leticia, and San Andrés.[1] In Table 1 we show the number of male and female professors working TC and DE commitments at each seat. There are 1613 male (70.7 %) and 667 female professors (29.3 %) at UNC. Bogotá is the largest seat by far, with 1512 professors, followed by Medellín with 491, Manizales with 162, and Palmira with 92. The three smallest seats, Arauca, Leticia, and San Andrés are comparatively tiny, with only 23 professors among the three of them. The percentages of female professors at the four largest seats are 32.2 % for Bogotá, 22.2 % for Medellín, 22.2 % for Manizales, and 30.4 % for Palmira.

Table 1. Number (*n*) of male and female professors working "tiempo completo" (TC) and "dedicación exclusiva" (DE) commitments ("Comm.") at each seat. Bogotá is the largest seat by far. Arauca, Leticia, and San Andrés are comparatively tiny.

Comm.	Seat	Sex	*n*
TC	Bogotá	F	233
TC	Bogotá	M	479
TC	Medellín	F	14
TC	Medellín	M	57
TC	Manizales	F	17
TC	Manizales	M	49
TC	Palmira	M	5
TC	Leticia	M	7
TC	San Andrés	F	1
DE	Bogotá	F	254
DE	Bogotá	M	546
DE	Medellín	F	95
DE	Medellín	M	325
DE	Manizales	F	19
DE	Manizales	M	77
DE	Palmira	F	28
DE	Palmira	M	59
DE	Arauca	F	1
DE	Arauca	M	2
DE	Leticia	F	1
DE	Leticia	M	2
DE	San Andrés	F	4
DE	San Andrés	M	5

1 The seats Arauca, Leticia, and San Andrés are officially called Orinoquía, Amazonía, and Caribe, respectively. Since 2015, two new seats have been inaugurated: De La Paz and Tumaco.

Our main interest in this paper is quantifying and explaining the GPG at UNC. With a mean monthly gross salary[2] of 9.87 MCOP for male professors and 8.66 MCOP for female professors, and a total mean salary of 9.52 MCOP for all professors, the global unadjusted[3] GPG for UNC stands at 0.123. (See Appendix 6.2 for a quick guide to the Colombian currency, the *peso*). This value is close to the value reported for the University of Valencia, Spain (0.11), and the University of the Basque Country, Spain (0.13), and below the estimated value for Colombia shown above (0.17-0.20) and the values reported by some British and Canadian universities including more heterogeneous working conditions (Jabbaz, Samper-Gras, & Díaz, 2019; Warman, Woolley, & Worswick, 2010) (around 0.20), but is still significant considering the egalitarian statute ruling the salaries of UNC professors.

In Table 2 we give the number of male and female professors with their mean salaries and unadjusted GPG for different combinations of commitment, training level, and academic rank. Associate DE professors with a doctorate degree comprise the largest group, with 676 professors and a GPG of 0.119, very close to the global GPG. A quick glance at the table shows large fluctuations in GPG among groups, but with an important caveat: large groups (with $n \geq 42$) have positive GPGs, meaning that male professors earn more than female professors. It is also worth noting that groups with low average salaries tend to be more egalitarian, with large absolute values of GPG mostly corresponding to groups with high average salaries.

Table 2. Gender pay gap (GPG) for different combinations of commitment ("Comm."), training level (TL), and academic rank. Only combinations with a minimum of seven male professors ($n_M \geq 7$) and three female professors ($n_F \geq 3$) are shown. The columns S_M and S_F give mean salaries in MCOP for male and female professors, respectively. The abbreviations for different training levels are defined in section 2.4.

Comm.	TL	Rank	n_M	n_F	n	S_M	S_F	GPG
TC	uni	associate	31	10	41	7.0	7.4	-0.059
TC	special	assistant	9	4	13	5.2	5.2	0.000
TC	special	associate	30	11	41	6.2	6.3	-0.009
TC	med	assistant	12	3	15	5.3	4.9	0.083
TC	med	associate	57	15	72	6.6	5.9	0.102
TC	med	full	23	7	30	9.7	7.6	0.223
TC	master	assistant	38	27	65	5.6	5.6	0.007
TC	master	associate	197	95	292	6.7	6.6	0.017
TC	master	full	20	13	33	10.5	8.2	0.219
TC	phd	assistant	8	4	12	6.7	6.4	0.034
TC	phd	associate	119	63	182	8.8	8.1	0.078
TC	phd	full	26	7	33	13.7	10.8	0.211
DE	uni	associate	17	3	20	9.0	10.1	-0.120
DE	special	associate	20	7	27	8.2	10.2	-0.247
DE	master	auxiliary	19	14	33	5.9	6.1	-0.020
DE	master	assistant	29	19	48	7.2	6.7	0.070

2 The salary figures that we quote throughout the paper correspond to 2015 salary points multiplied by the 2020 point value and are thus adjusted for inflation but do not take into account any salary points gained after 2015. Relative measures such as the GPG are of course unaffected by changes in the point value.

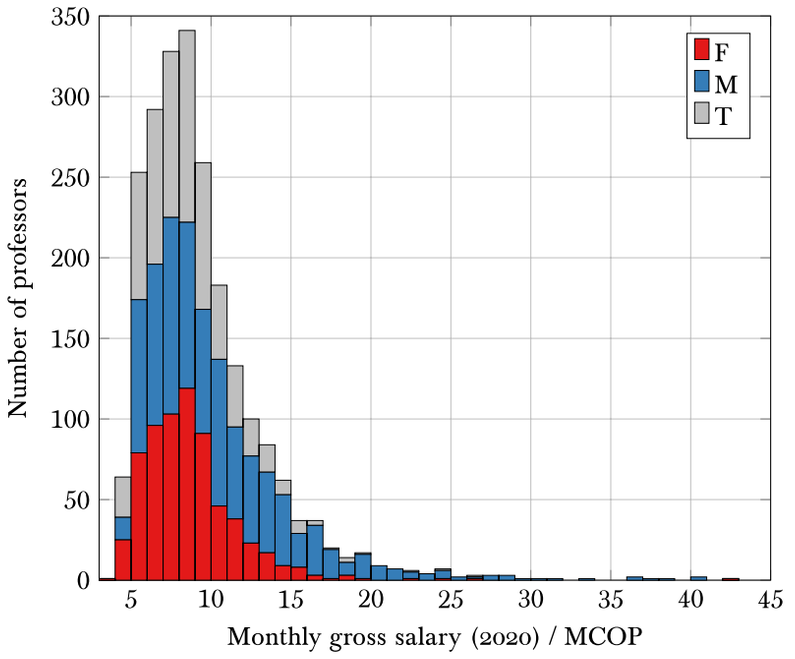
3 This unadjusted GPG is actually lower than a "raw" GPG, since, by definition, all professors at UNC share a similar profession.

Table 2 (continued). Gender pay gap (GPG) for different combinations of commitment ("Comm."), training level (TL), and academic rank. Only combinations with a minimum of seven male professors ($n_M \geq 7$) and three female professors ($n_F \geq 3$) are shown. The columns S_M and S_F give mean salaries in MCOP for male and female professors, respectively. The abbreviations for different training levels are defined in section *2.4*.

Comm.	TL	Rank	n_M	n_F	n	S_M	S_F	GPG
DE	master	associate	165	64	229	9.4	8.8	0.071
DE	master	full	15	5	20	12.6	16.7	-0.325
DE	phd	assistant	90	43	133	8.3	7.8	0.062
DE	phd	associate	470	206	676	11.4	10.0	0.119
DE	phd	full	163	33	196	17.0	15.2	0.105

In Figure 1 we show a histogram of monthly gross salaries for male (blue) and female (red) professors. The gray bars correspond to the sum of the blue and red bars, which give the total number of professors. The female distribution peaks at 8 MCOP to 9 MCOP, and essentially vanishes at 16 MCOP. The male distribution peaks earlier, at 7 MCOP to 8 MCOP, but remains significant up to 25 MCOP. In turn, there are 180 out of 2280 professors whose monthly salary exceeds 15 MCOP, of which 20 (11.1 %) are women, and only 55 professors who earn more than 20 MCOP, of which 4 (7.3 %) are women.

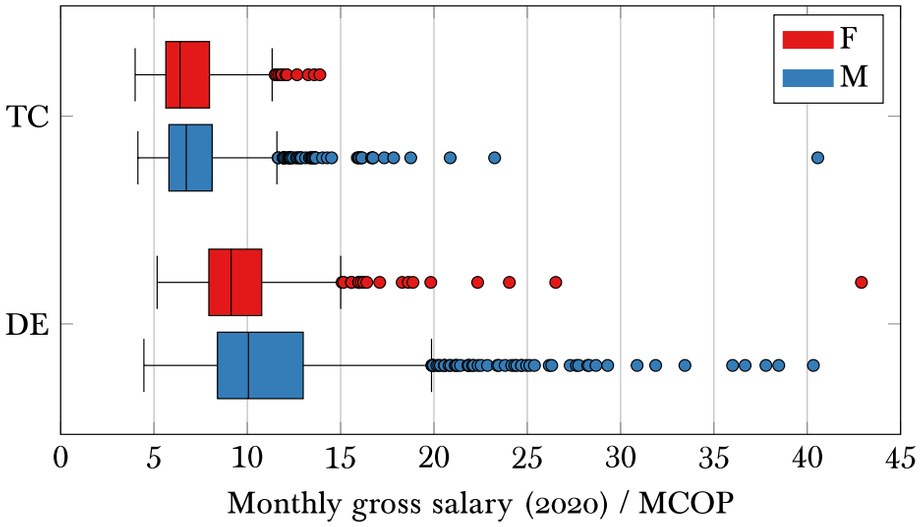
Figure 1. Monthly gross salary histogram, with bar width equal to 1 MCOP. All bars start at zero, with the gray bar showing total number of professors, i.e., the sum of the male (blue) and female (red) bars.



The total distribution mostly resembles the male one, since 70.7 % of professors are male. The long tail of the male distribution is a sign of the greater income inequality among male professors. In fact, Gini coefficients for male and female professors are 0.22 and 0.17, respectively, confirming that male earnings are more unequal than women's, while the global Gini coefficient for the whole university stands at 0.21. These numbers seem low for an extremely unequal country such as Colombia, with a 2019 Gini coefficient of 0.53 (World Bank, 2021), but one must keep in mind that they correspond to a roughly homogeneous group of highly-educated people, who additionally work at an institution that assigns salaries based on a gender-blind points system.

In Figure 2, we use a boxplot to show the salary distribution of TC and DE male and female professors. (See Appendix 6.3 for our conventions on boxplots). The salary distributions for male and female TC professors are essentially the same, with similar medians (6.7 MCOP and 6.4 MCOP, respectively) and the same IQR, 2.2 MCOP. There are, however, noticeably more outliers among male professors, including one extreme case with a salary close to 40 MCOP. The salary distributions for male and female DE professors, on the other hand, differ significantly, with median salaries of 10.1 MCOP and 9.1 MCOP and IQRs of 4.6 MCOP and 2.8 MCOP, respectively. This means that not only male DE professors earn, on average, more than female DE professors, but the variation among male professors is greater than among females, confirming the trend observed with the Gini coefficient. Again, there are many more outliers among male than female professors (but witness the UNC highest salary, at 42.9 MCOP, for a female DE professor).

Figure 2. Salary distribution for "tiempo completo" (TC) and "dedicación exclusiva" (DE) commitments, split according to sex. See appendix 6.3 for our conventions on boxplots.



Mean gross salaries for TC and DE professors stand at 7.3 MCOP and 10.9 MCOP, respectively. Roughly 55 % of this difference can be explained away by the 22 % extra salary received by DE professors, mentioned above. On the other hand, TC professors are allowed to earn extra income besides their UNC salary and may find this a preferable route. In fact, in fields such as health care, fine arts, economy, and administration it is quite common for professors to do paid work as doctors, artists or consultants. This difference may help explain the remaining gap between both groups. However, our data is restricted to the wages obtained by TC and DE professors at UNC and does not include any income earned by TC professors outside UNC.

2.2 Adjusted Gender Pay Gap

To compute an adjusted GPG that takes into account different commitments, training levels, academic ranks, and areas of knowledge, we fit a standard Mincer earnings function to our data according to the equation[4]

$$\ln S_i = X_i'\beta + \epsilon_i,$$

where the index i identifies professors, with $i = 1, \ldots, 2257$, S_i is monthly gross salary in MCOP, X_i is a vector encoding the explanatory variables sex, commitment, training level, rank, and area, plus a constant term, β is a vector of coefficients and an intercept to be determined, and ϵ_i is an error term. The various β-coefficients from a least-squares regression analysis with

4 Our fitted model excludes the 23 professors from the smallest seats, for which we have no data about area of knowledge.

$R^2 = 0.64$ are given in Table 5 (see Appendix 6.5). With $\beta_{\text{male}} = 0.0736$, the adjusted GPG can be computed as $\text{GPG} = 1 - \exp(-\beta_{\text{male}}) = 0.071$.

This is a most striking result. *All other factors being equal, women's mean salaries still turn out to be about 7 % lower than men's*. The unadjusted GPG of 0.123 decreases to 0.071 when accounting for different commitments, training levels, academic ranks, and areas of knowledge, but it is not reduced to zero. This means that even ignoring the fact that women achieve full professor rank less often than men, as will be ascertained in section 2.5, a 7 % GPG remains. This is important since, as Table 5 shows, achieving full professor rank is the single largest contributor to a higher salary, with an associated 112 % wage increase.

Table 5 also shows that, considering the control variables, DE professors earn about 31 % more than TC professors. This is a larger percentage than the one that DE professors receive on account of their exclusive commitment to UNC, again showing that only part of the gap between the two groups can be explained away by that extra 22 %.

The 7 % adjusted GPG we find is similar to that obtained by Cook et al., 2018, who study the gender earnings gap among rideshare drivers on Uber in the United States. In a similar context, Litman et al., 2020 find a 10 % adjusted GPG among Mechanical Turk workers. Although UNC professors and "gig" economy workers may appear to have little in common, both groups' salaries are assigned according to gender-blind formulae that focus on productivity, and in both cases a similar GPG is found.

2.3 Blinder–Oaxaca decomposition of the gender pay gap

To determine how much of the gender pay gap can be attributed to differences in explanatory variables (commitment, training level, academic rank, and area of knowledge) between male and female professors and how much corresponds to different slopes in a linear model, we perform a threefold Blinder–Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973). This statistical method allows us to decompose the difference in mean salaries as the sum of three components: endowments, slopes, and interaction,

$$S_M - S_F = \bar{X}'_M \beta_M - \bar{X}'_F \beta_F = \underbrace{(\bar{X}'_M - \bar{X}'_F)\beta_F}_{\text{endowments}} + \underbrace{\bar{X}'_F(\beta_M - \beta_F)}_{\text{slopes}} + \underbrace{(\bar{X}'_M - \bar{X}'_F)(\beta_M - \beta_F)}_{\text{interaction}},$$

where $\bar{X}_M$ and $\bar{X}_F$ are vectors encoding the mean values of the explanatory variables, and β_M and β_F are coefficient vectors for separate linear models for male and female professors, respectively (Gupta, Oaxaca, & Smith, 2006; Horrace & Oaxaca, 2001; Stanley & Jarrell, 1998; Tharp et al., 2019; Weichselbaumer & Winter-Ebmer, 2005).

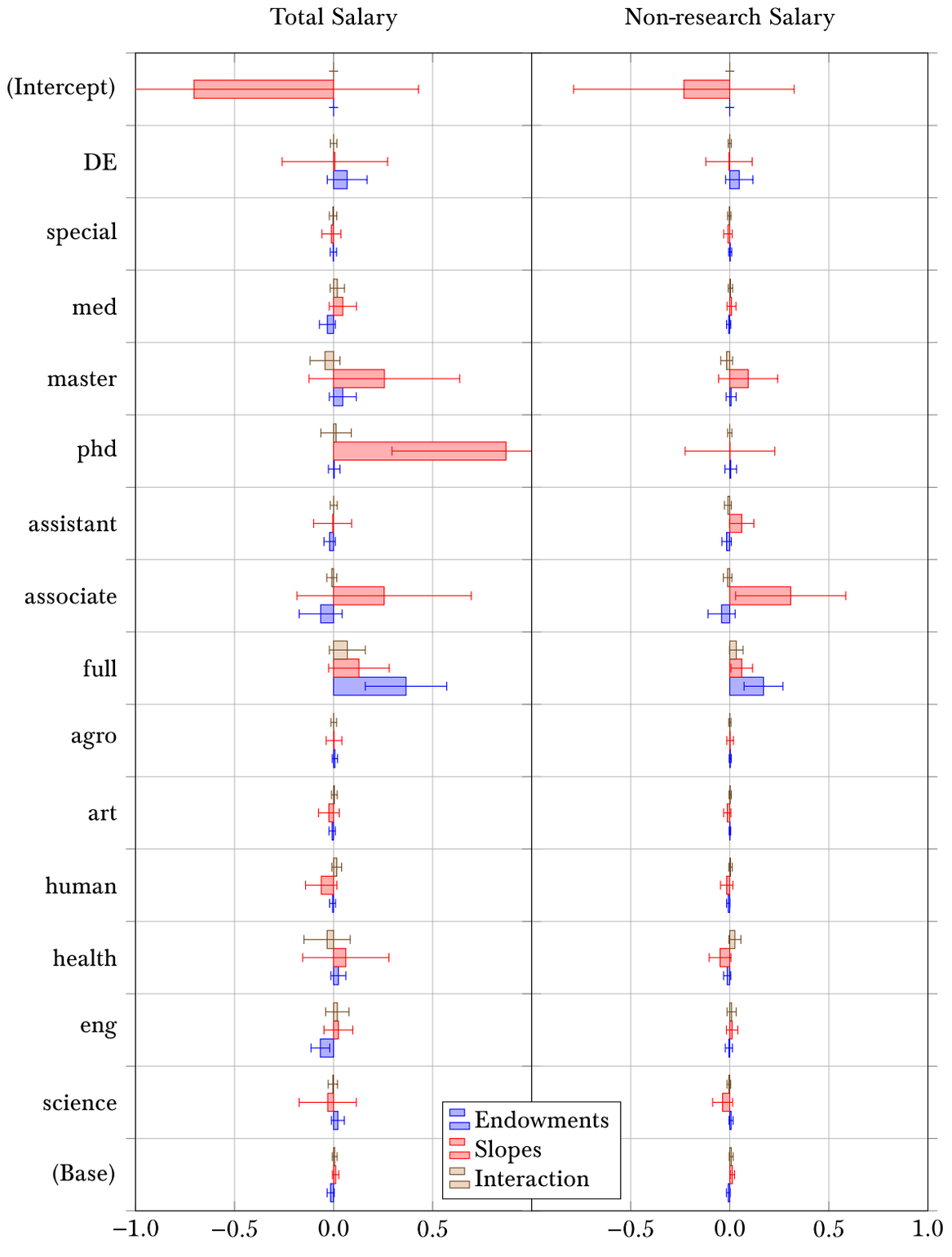
Table 3. Overall results for various threefold Blinder–Oaxaca decompositions. The difference ("Dif.") in mean salaries between male and female professors is split into three components: endowments, slopes, and interaction. For each of these components we quote coefficients ("Coef.") and bootstrapped standard errors (SE). All values are in MCOP.

			Endowments		Slopes		Interaction	
Salary	Rank	Dif.	Coef.	SE	Coef.	SE	Coef.	SE
Total	all	1.2088	0.3257	0.1092	0.8270	0.1343	0.0562	0.0990
	full	2.5957	0.7027	0.6929	1.6469	0.6620	0.2461	0.3919
	associate	0.7403	-0.0477	0.0910	0.8296	0.1158	-0.0416	0.0717
Non-research	all	0.3906	0.1470	0.0603	0.2011	0.0408	0.0425	0.0303
	full	0.6861	0.2976	0.1677	0.2837	0.1677	0.1048	0.1073
	associate	0.2222	-0.0223	0.0645	0.2268	0.0495	0.0177	0.0319

As Table 3 shows, the 1.21 MCOP difference in mean salaries can be split into 0.33 MCOP for endowments, 0.83 MCOP for slopes, and 0.06 MCOP for interaction. This amounts to an unexplained (slopes plus interaction) GPG of 0.089, which is roughly consistent with the adjusted GPG of 0.071 found in section *2.2*.

Table 3 also reports the results of Blinder–Oaxaca decompositions for full and associate professors separately, which we comment further below in section *2.5*, and for the non-research part of the salary, which is discussed in section *3.1*.

Figure 3. Coefficients and 95 % confidence intervals for each explanatory variable in a threefold Blinder–Oaxaca decomposition for total and non-research salary, in MCOP. The various keys on the vertical axis are defined in sections *2.4*, *2.5*, and *2.6*. Omitted indicator variables (TC, uni, auxiliary, and econ) act as reference values.



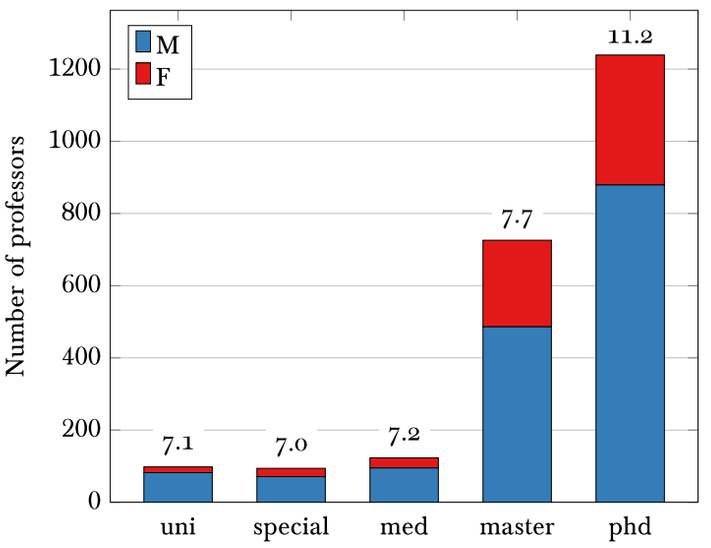
In Figure 3 (see also Table 6 in Appendix 6.5), we split the endowments, slopes, and interactions components into contributions associated with each of the explanatory variables. The left half of the picture corresponds to the total salary while the right half of the picture focuses on the non-research part of the salary, which is discussed below in section *3.1*. There are only two variables whose 95 % confidence intervals exclude zero: phd, for slopes, and full, for endowments. An endowments coefficient of 0.37 MCOP for full professors reflects the fact that male professors achieve full rank more often than female professors, as will be discussed in section *2.5*. As mentioned in section *2.2*, achieving full professor rank is the single most important contributor to a higher salary, thus explaining a significant part of the unadjusted gap. Even though it shows up in the explainable component of the gap, the fact that male professors are overrepresented at the highest, full professor rank may hide discriminatory trends that prevent women from accessing higher positions. See sections *2.5* and *3.2* for further discussion of this point. On the other hand, a slopes coefficient of 0.87 MCOP for professors with a Ph.D. means that earning a doctorate is worth 0.87 MCOP more for male than female professors. This is the single largest contribution to the unexplained GPG. In section *3.1* we argue that this difference can be attributed to higher research productivity in men.

In sections *2.4*, *2.5*, and *2.6*, we examine how training level, academic rank, and area of knowledge affect salaries and differentially contribute to the GPG.

2.4 Training Level

In this section we examine the effect of professors' training level in their salaries. In Figure 4, we show a stacked bar plot with the number of male (blue) and female (red) professors for different training levels: university professional ("uni"), specialization ("special"),[5] medical or dentistry specialization ("med"), master's degree ("master"), and Ph.D., doctorate or equivalent ("phd"). Most professors (86.2 %) hold a master's or Ph.D. degree. Women are slightly overrepresented among professors with a master's degree, where 33.1 % of professors are female, but underrepresented among the three lower academic levels. At 29.1 %, the fraction of women among professors with a Ph.D. is very close to the total fraction of female professors. On top of each bar we have shown the mean monthly gross salary for each group, which presents remarkable differences (between 3.5 MCOP and 4.2 MCOP) in favor of professors possessing a Ph.D. with respect to the other four training levels.

Figure 4. Stacked bar plot showing the number of male and female professors for each training level. Female (red) bars start immediately above male (blue) bars, meaning that the top of the bar matches the total number of professors. The numbers above each bar give the mean monthly gross salary for each group, in MCOP. The keys below each bar are defined in the text.

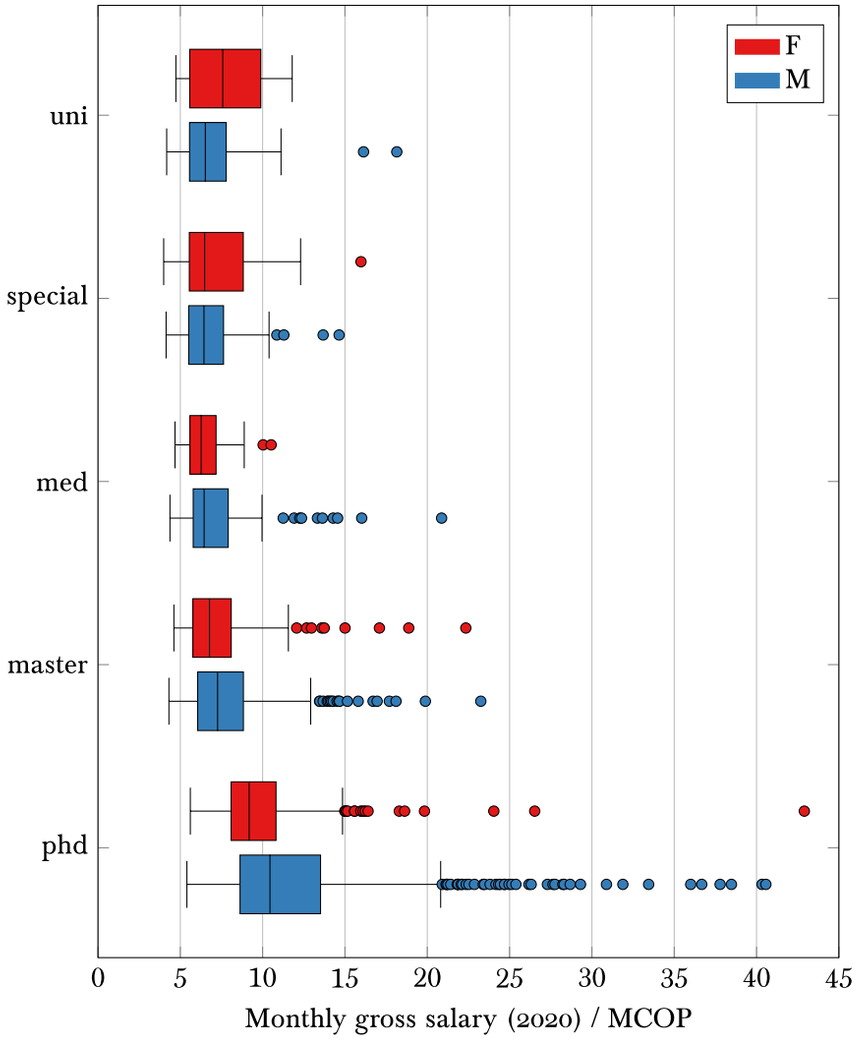


5 In Colombia, a "specialization" describes a first graduate level immediately below a master's degree.

Consider the two most common groups, professors with either a master's degree or a Ph.D. About a third of the 3.5 MCOP income difference between these two groups can be attributed to the extra salary points awarded by UNC to professors with a Ph.D., which amount to 1.2 MCOP. This means that professors with a master's degree can expect to increase their salary by an average 16 % only by virtue of earning a Ph.D., which fits nicely with the 20 % difference between these two training levels found in Table 5. As we show below, the remaining difference can be explained by the salary points awarded by research productivity. Not all professors with a Ph.D. have a strong publication record, but those who are active in research tend to have a Ph.D.

In Figure 5, we use a boxplot to show the salary distribution for male and female professors grouped according to training level. As already seen in Figure 4, salaries increase with training level, particularly at the master's and Ph.D. levels. Figure 5 also shows an inversion effect: salaries for women are higher than men's at the university professional level, roughly equal at the specialization levels ("special" and "med"), and lower at the master's and Ph.D. levels. In fact, median salaries for male and female professors at the "uni" level are 6.5 MCOP and 7.6 MCOP, respectively, while at the "phd" level the corresponding numbers are 10.4 MCOP and 9.2 MCOP. Thus, a full 1.1 MCOP difference in favor of women turns into a 1.2 MCOP difference in favor of men when moving between these two training levels. This last gap at the Ph.D. level cannot be explained away by appealing to confounding variables, as shown in the Blinder–Oaxaca analysis performed in section *2.3*, which gives a 0.9 MCOP "unexplained" gap between male and female professors with a Ph.D. (see also Table 6 in Appendix 6.5). As a first step towards understanding this gap, we notice that earning a Ph.D. requires research experience. In section *3.1*, we show that male professors tend to be more productive in research than female professors.

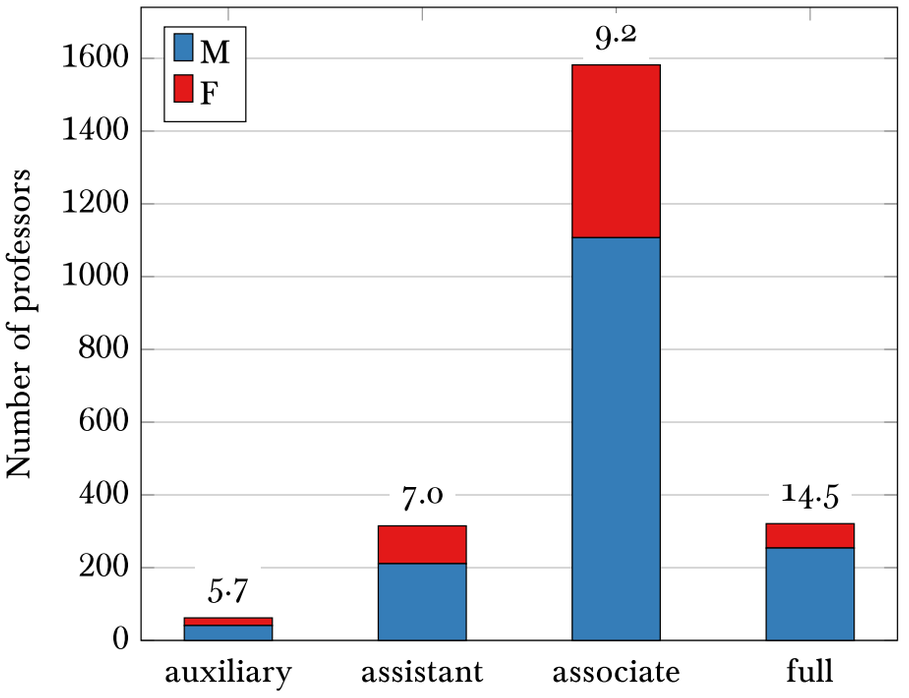
Figure 5. Salary distribution split according to training level and sex. See Appendix 6.3 for our conventions on boxplots



2.5 Academic Rank

In Figure 6, we present the population of male and female professors corresponding to the different academic ranks or categories[6] in ascending order (auxiliary, assistant, associate, and full professor). Most professors, 69.4 % of the total, are in the associate category, followed by full professors with 14.1 %, and assistant professors with 13.8 %, while the least populated rank corresponds to auxiliary professor with only 2.7 %.

Figure 6. Stacked bar plot showing the number of male and female professors for each academic rank. Female (red) bars start immediately above male (blue) bars, meaning that the top of the bar matches the total number of professors. The numbers above each bar give the mean monthly gross salary for each group, in MCOP.



The fraction of women in each category decreases inversely with rank: 33.9 % for auxiliary, 33.0 % for assistant, 30.0 % for associate, and 20.9 % for full professor, revealing that women occupy, in greater proportion, less prestigious categories such as auxiliaries and assistants, where salaries tend to be lower (Chodorow, 2007). This general pattern has been previously reported for some faculties at UNC (Zuluaga Sánchez et al., 2019) and it is also observed in other Colombian and foreign universities (Ibarra & Castellanos Llanos, 2009; Jabbaz, Samper-Gras, & Díaz, 2019; Misra, Lundquist, Holmes, et al., 2011; *Presupuestos con enfoque de género en la UPV/EHU (2011-2016)*, 2015; Winslow & Davis, 2016).

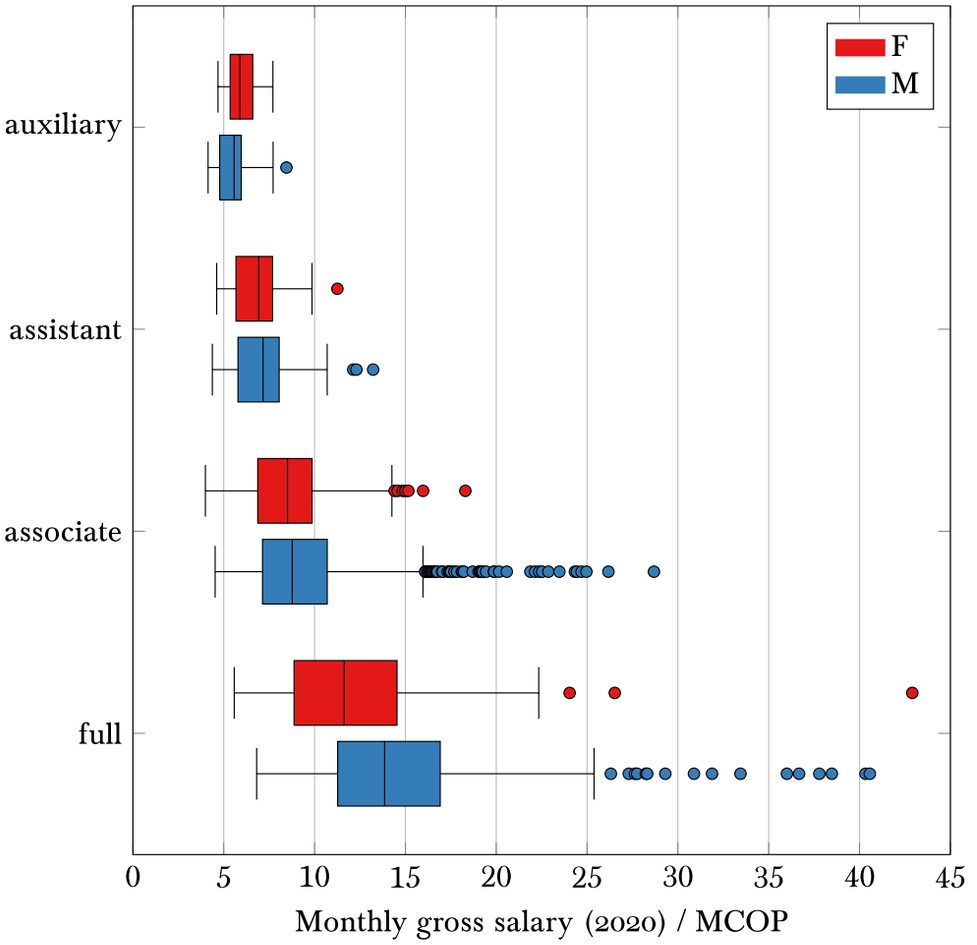
The mean monthly gross salaries for each category are shown on top of each bar. These present substantial differences among them, with the smallest gap, at 1.3 MCOP, between auxiliary and assistant professors and the largest one, at 5.3 MCOP, between associate and full professors.

Consider the gap between associate and full professors. Full professors earn on average 58 % more than associate professors, and this figure is roughly consistent with the coefficients in Table 5, which show a 45 % extra salary for the former group with respect to the latter. Although UNC rewards professors that are promoted to a higher academic rank with some extra salary points, these do not begin to explain the mean salary differences between categories. For in-

6 The UNC academic rank system is directly comparable to the one used in the United States, on which it is modeled. The "auxiliary" category is seldom used.

stance, moving from associate to full professor earns the beneficiary only 0.3 MCOP (República de Colombia, 2002), which falls extremely short of the 5.3 MCOP difference between mean salaries for both ranks. However, the promotion to full professor involves some requisites concerning research productivity that must be fulfilled. These research skills affect the salary far more than the rank change itself, as will be shown below.

Figure 7. Salary distribution split according to academic rank and sex. See Appendix 6.3 for our conventions on boxplots.



In Figure 7, we use a boxplot to show the salary distributions for male and female professors grouped according to academic rank. As already seen in Figure 6, salaries increase with academic rank, particularly at the associate and full professor ranks. However, it is also noticeable that the range of salaries is wider as one ascends the academic ladder, showing that there are some factors beyond the rank level that affect the salary of the professors. Moreover, Figure 7, like Figure 5 above, shows an inversion pattern, with median salary differences for each rank as follows: -0.3 MCOP for auxiliary, 0.2 MCOP for assistant, 0.3 MCOP for associate, and 2.2 MCOP for full professors.

In Table 3, we show the overall results of a Blinder–Oaxaca decomposition for the mean difference in total salary of full and associate professors separately. For full professors, the 2.6 MCOP mean salary difference can be split into a 0.7 MCOP "explained" component, and a 1.9 MCOP "unexplained" component (slopes plus interaction). On the other hand, the 0.7 MCOP mean salary difference for associate professors falls almost completely within the "unexplained" component. A more detailed look at these decompositions, as seen in Table 7 and Table 8, shows that the largest contribution to the "unexplained" component comes from the phd indicator variable, with 1.6 MCOP for full and 0.7 MCOP for associate professors. As in section *2.4*, earning a Ph.D. again surfaces as the main source of the unexplained GPG.

2.6 Areas and Departments

In this section, we study the population and salaries of professors in different areas of knowledge, which we have grouped as follows: "agro," for agronomy, veterinary, and similar; "art," for fine arts; "human," for humanities and social sciences; "health," for health care; "econ," for economics, administration, accounting, and similar; "eng," for engineering, architecture, urban planning, and similar, and "science," for mathematics and natural sciences.

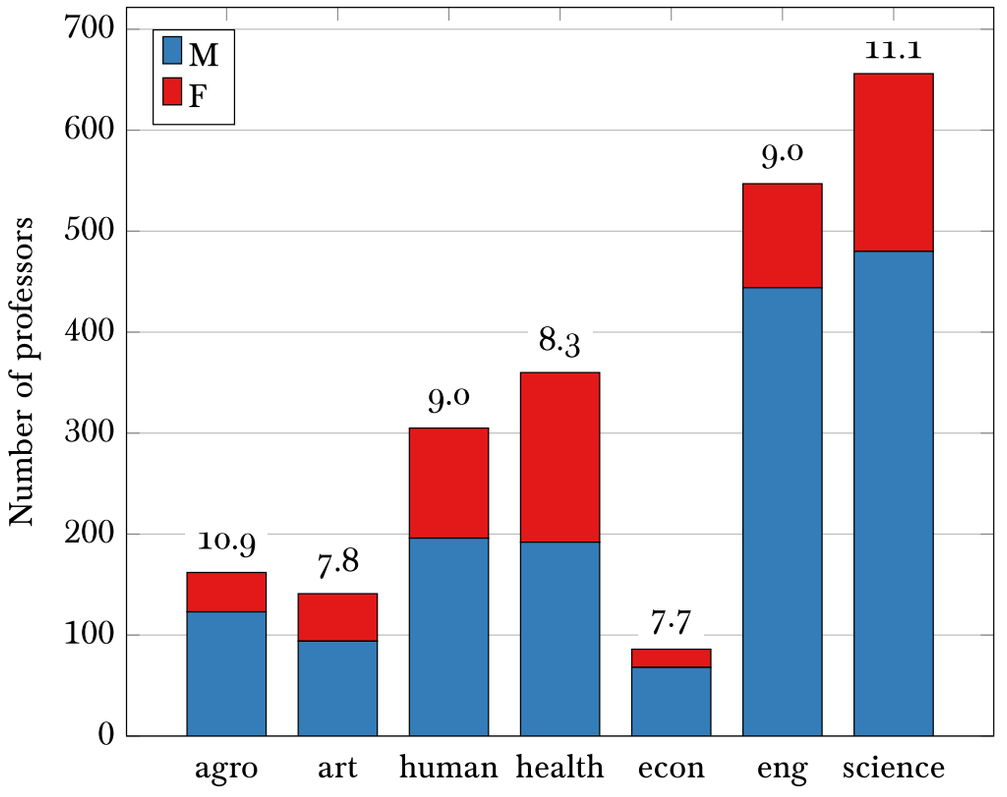
UNC's smallest seats, Arauca, Leticia, and San Andrés, are not (yet) organized in different departments for each area. For this reason, we have omitted them from the analysis in this section.

The histogram in Figure 8 shows the number of male (blue) and female (red) professors in each area. Bars are stacked, meaning that the total height of the bar matches the total number of professors. The numbers on top of each bar give the mean gross salary for each area, in MCOP.

Female presence clearly varies greatly among different areas. The fraction of female professors, sorted from lowest to highest, is 18.8 % for "eng," 20.9 % for "econ," 24.1 % for "agro," 26.8 % for "science," 33.3 % for "art," 35.7 % for "human," and 46.7 % for "health."

It is remarkable that the areas with the highest salaries, "agro" (10.9 MCOP) and "science" (11.1 MCOP), have low fractions of women while "health," the field with the largest female representation, has a gross mean salary of 8.3 MCOP, well below the total gross mean salary at UNC, 9.5 MCOP.

Figure 8. Stacked bar plot showing the number of male and female professors in each area of knowledge. Female (red) bars start immediately above male (blue) bars, meaning that the top of the bar matches the total number of professors. The numbers above each bar correspond to the mean monthly gross salary for each area, in MCOP. The keys below each bar are defined in the text.

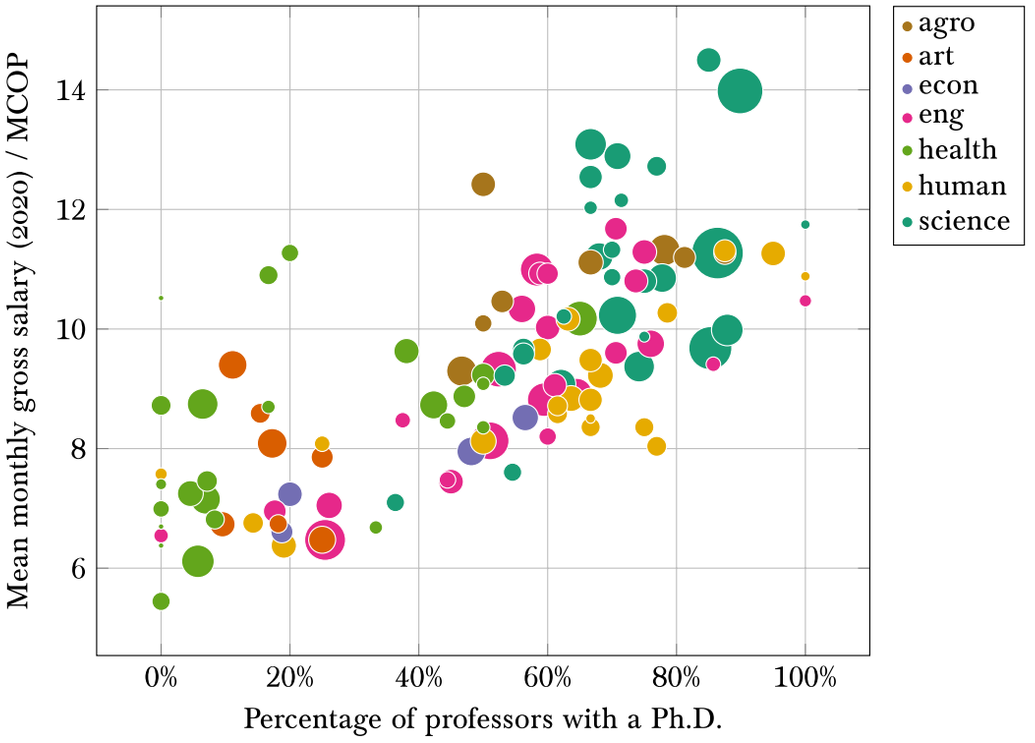


In Figure 9, each dot represents a single department within UNC. On the horizontal axis we plot the fraction of professors with a Ph.D., while the vertical axis gives the mean monthly gross

salary for each department. The color of each dot refers to one of the seven areas of knowledge outlined above, while its size is proportional to the number of professors in the department.

The first insight one gains from Figure 9 is the clear positive correlation between mean salary and percentage of doctors in a department. Looking a bit further, we discern a clustering of the departments in two groups, one below 40 % of professors with a Ph.D. and low salaries, with a main group around 7 MCOP, and the other cluster above 40 % of doctors with most salaries between 8 MCOP and 12 MCOP and a small subgroup of science departments enjoying mean gross salaries above 12 MCOP.

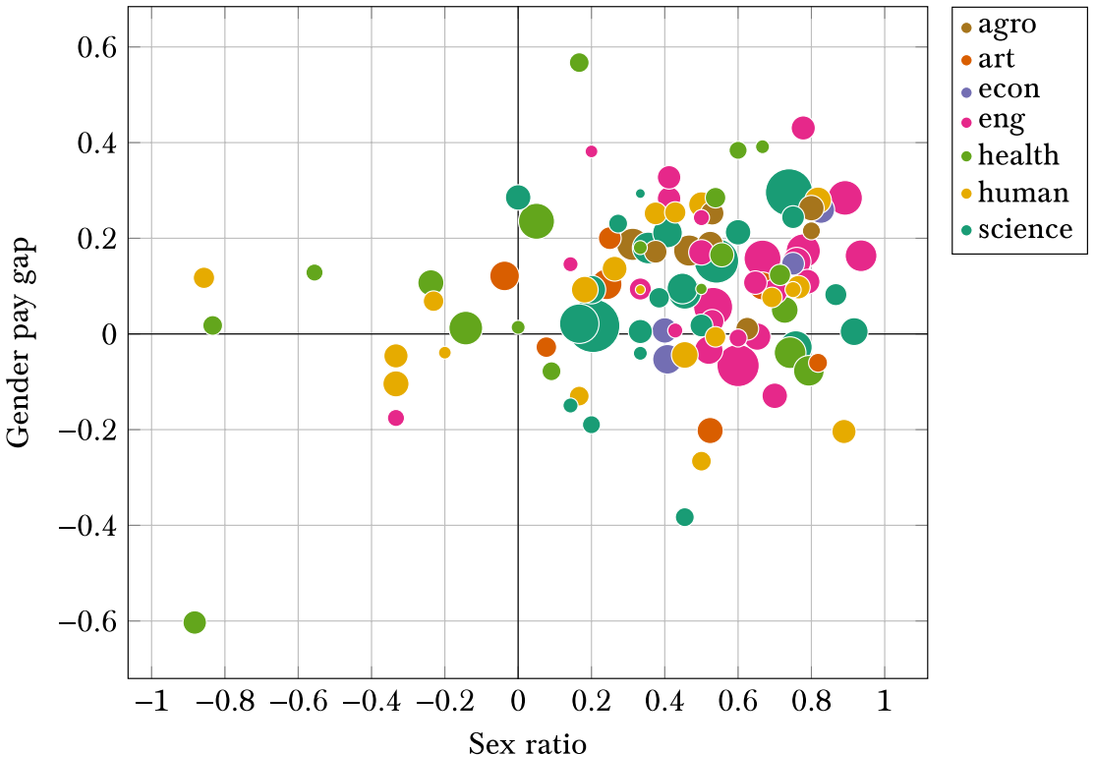
Figure 9. Mean monthly gross salary per department vs. percentage of professors with a Ph.D. Colors correspond to different areas of knowledge, while the size of the dots relates to the number of professors in the department.



It is also interesting to notice that different colors, corresponding to different areas of knowledge, tend to cluster together. Science departments located in the upper-right corner mostly have the highest percentages of Ph.D. professors and the highest salaries. The opposite corner, corresponding to the departments with lower salaries, is mostly populated by health departments with percentages of doctorate professors below 10 %.

Mean salaries for different areas of knowledge, as depicted in Figure 8, do not seem to be related in any straightforward way with the area coefficients in Table 5, because, as shown in Figure 9, area correlates strongly with the fraction of professors with a Ph.D., which has roughly twice as strong an influence on salaries. This result is also confirmed by the Blinder–Oaxaca decomposition in the left-hand panel of Figure 3 and in Table 6, showing that endowments, slopes, and interaction coefficients for area do not significantly differ from zero.

Figure 10. Gender pay gap vs. sex ratio per department. Colors correspond to different areas of knowledge, while the size of the dots relates to the number of professors in the department. All-male and all-female departments are automatically excluded from this graph, since no GPG can be computed in these cases. See Appendix 6.4 for the formal definition of sex ratio that we use throughout the paper.



In Figure 10, which shows the gender pay gap against the sex ratio for each department, we can see that the majority of departments lay above the horizontal axis, showing an income imbalance favoring male professors. Most departments also lie to the right of the vertical axis, i.e., have more male than female professors. (See Appendix 6.4 for the formal definition of sex ratio that we use throughout the paper). One important result we can infer from Figure 10 is that, although sex ratio varies significantly among different areas of knowledge, this effect is not the main responsible for the gender gaps that do exist across the different areas and most departments. Male professors outnumber and outearn female professors in all areas of knowledge at UNC.

3 Sources of inequity

In this section we dive deeper into the salary data in order to identify the main factors that cause the GPG at UNC. We will examine the gender effect on salaries coming from research productivity and access to administrative decision-making positions.

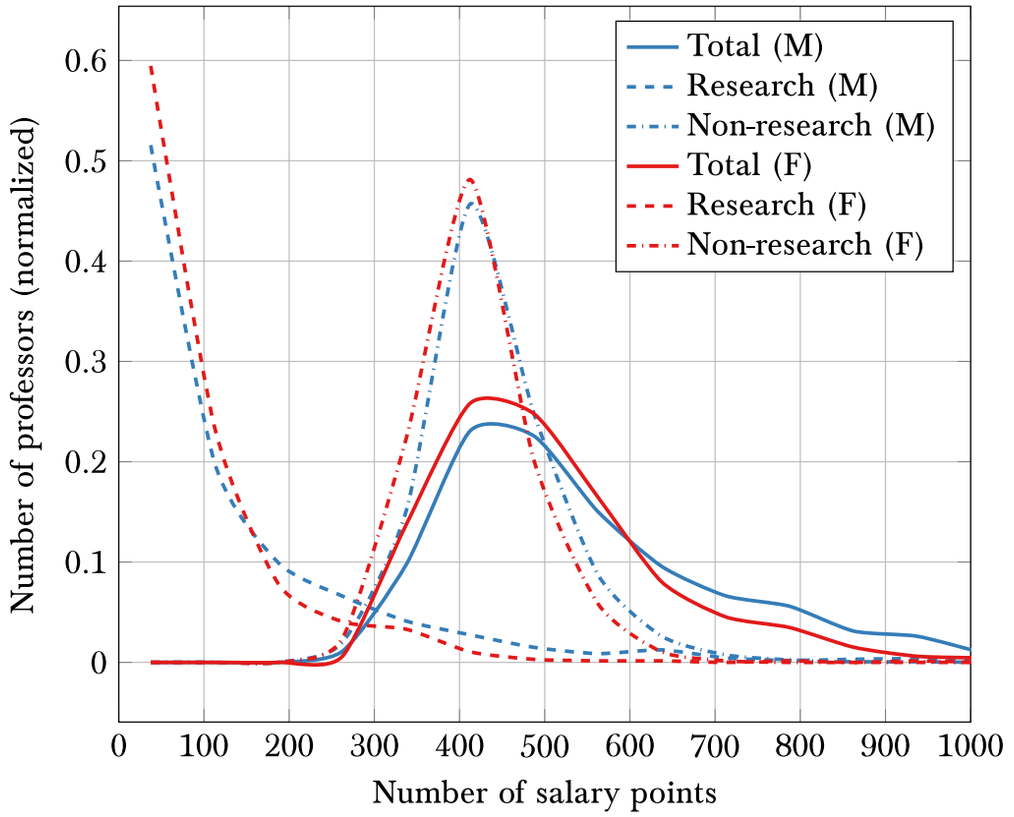
A first source of inequity might be found in the allocation of tasks within UNC, as mentioned in section 1. Tasks are declared in the Academic Work Program, which is the instrument through which professors at UNC register the plan of activities that they will carry out during the year, including teaching, research, outreach, and administration (Consejo Académico, 2012). This plan must be agreed between the professor and the head of each department. Apart from a rule that requires all professors to invest at least 50 % of their time on teaching, departments enjoy much freedom in deciding how to focus their efforts. We have no data on any gender differences in this allocation of tasks, and therefore its consequences for the gender pay gap lie beyond the scope of our work.

3.1 Research productivity

Professors' salaries at UNC are based on a points system with clear, open rules common to all public universities in Colombia (República de Colombia, 2002). The salary points assigned to a professor depend on training level, academic rank, qualified experience, academic-administrative positions, and research productivity, and are awarded by a national-level university committee independent of faculties and departments (Consejo Superior Universitario, 2013a). See Table 4 in Appendix 6.5 for all categories of salary points. Note that there are no salary points explicitly associated with teaching. Since there is no possibility of individually negotiating one's salary, and salary points are assigned through transparent gender-blind rules, we regard this system as egalitarian.

There are caps on the number of salary points achievable in each category, with the exception of research productivity. Research productivity points can be gained through publications in scientific journals, books or book chapters, patents, artworks, and licensed software. For instance, every published article may add up to 15 salary points depending on the number of authors and the category of the journal, which is assessed by the Ministry of Science. See Table 4 in Appendix 6.5 for summary statistics of all salary points, where research salary points are denoted by an asterisk. Non-research salary points are simply the difference between total and research salary points.

Figure 11. Normalized histograms for the number of salary points for male (blue) and female (red) professors. Solid lines represent the total salary points, dashed lines the research salary points and dashed-dotted lines the non-research salary points.



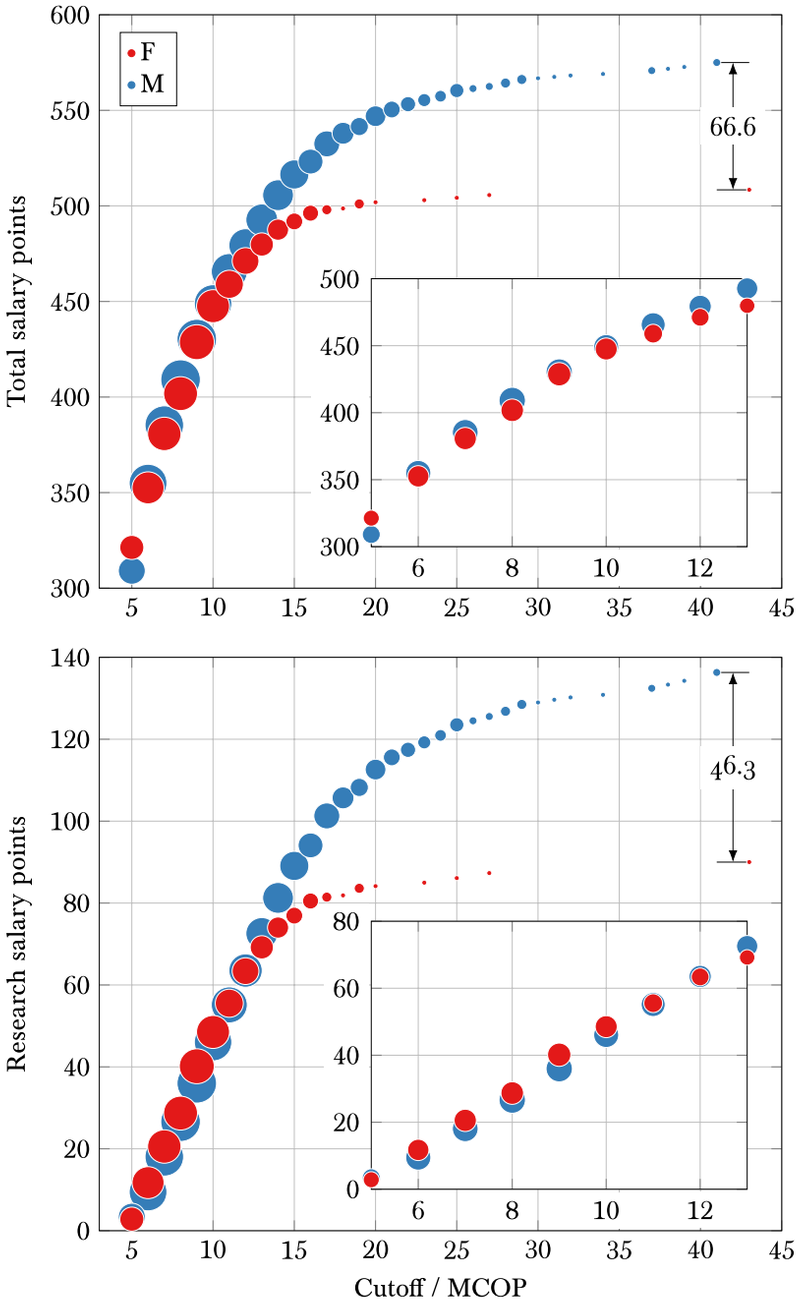
In Figure 11, we show normalized histograms for the number of salary points for male (blue) and female (red) professors. We plot in solid line the total salary points, in dashed line the research salary points and in dashed-dotted line the non-research salary points.

The most striking feature of Figure 11 is the completely different shape of the curves for research and non-research salary points. Non-research salary points are symmetrically distributed for both male and female professors, with a mean of 433 salary points and a nearby median

of 424 salary points. Research salary points, on the other hand, possess a positively skewed, reverse-J shaped distribution with a long tail, peaking at zero salary points, with a median of 66 salary points and a much larger mean of 123 salary points. The effect of research salary points on the total is to increase both the range of salaries and the inequalities, which go from a Gini coefficient of 0.10 for non-research salary points to a Gini coefficient of 0.19 for total salary points.[7]

In all three curves, for total, research, and non-research salary points, male and female distributions differ significantly. Female professors are overrepresented in the low ranges and underrepresented in the high ones. The male and female curves intersect at 150 points for research, 450 points for non-research, and 600 points for total salary points. This means that we find a lower-than-average percentage of women among professors with more than 150 research salary points, 450 non-research salary points, and 600 total salary points.

Figure 12. Average salary points for male and female professors with different salary cutoffs. Above: total salary points; below: research salary points. The inserts above and below zoom in around a 10 MCOP cutoff, where average salary points for male and female professors start to diverge.



7 The slight difference between the Gini coefficients for total salary points and actual salaries is due to the extra 22 % earned by DE professors.

To explore this effect further, in Figure 12 we show the average salary points for male and female professors with different salary cutoffs. Each dot represents the mean number of total (above) or research (below) salary points for male (blue) and female (red) professors, considering only professors with salaries below any given cutoff. The size of the circles is related to the number of new professors included in each new cutoff and clearly shows the lower presence of women among UNC's highest salaries. From the upper chart we readily learn that there exists hardly any gap between male and female professors if we focus our attention only on professors earning less than 10 MCOP per month. When we include salaries above the 10 MCOP threshold, a steady difference starts to build up until we arrive at global mean values of 508.4 salary points for women and 575.0 salary points for men. This difference of 66.6 salary points between male and female professors can be mostly attributed to research productivity. From the lower graph we find that the global mean research salary points are 136.3 points for male professors and 90.0 for female professors. This 46.3-point difference accounts for 70 % of the GPG at UNC. The insert in the lower chart shows that female professors actually have a slightly higher number of research salary points below the 10 MCOP cutoff.

It is clear from these graphs that there is a breaking point in the GPG for salaries over 10 MCOP, corresponding to 32.5 % of the total number of professors. For salaries below this value the fraction of female professors is 33.4 % and above 10 MCOP the ratio is only 20.6 %. We have previously mentioned that among the professors who earn more than 15 MCOP only 11.1 % are women and above 20 MCOP this value shrinks to 7.3 %. These results confirm that the highest salaries are rare for female professors and the gender inequalities in mean salary increase with the ascending income level.

To further explore the effect of research productivity on the GPG, we have performed three additional Blinder–Oaxaca decompositions of non-research salary for all professors and for full and associate professors separately. Overall results can be read on the lower half of Table 3. The mean salary difference is greatly reduced in all cases; from 1.2 MCOP to 0.4 MCOP for all professors, from 2.6 MCOP to 0.7 MCOP for full professors, and from 0.7 MCOP to 0.2 MCOP for associate professors. As these numbers show, the reduction in mean salary difference is significant in all three cases but particularly dramatic in the case of full professors. The gap reduction in slopes coefficient is also stark, from 0.8 MCOP to 0.2 MCOP for all and associate professors, and from 1.6 MCOP to 0.3 MCOP for full professors. In short, we find that the research salary is the main source of salary differences between men and women, especially for the "unexplained" component.

In Figure 3, we plot the coefficients with their associated confidence intervals for every explanatory variable in two Blinder–Oaxaca decompositions, one for full salary on the left-hand side panel, and another for the non-research salary on the right-hand side panel. The most striking difference between these two graphs is the complete disappearance of the Ph.D. contribution to the unexplained slopes component, supporting the conclusion that most of the GPG comes from a difference in research productivity between men and women. In other words, the differential weight of a Ph.D. for male and female professors vanishes when we focus only on the non-research salary. This means that the high phd slopes coefficient in the full salary decomposition is an indicator of the research productivity gap between male and female professors, because, in this context, earning a Ph.D. mostly serves as a prerequisite to carrying out scientific research.

Unfortunately, in this work we had no access to information concerning professors' children due to data privacy regulations at UNC, so we cannot evaluate the salary effects of motherhood and fatherhood.

3.2 Access to academic-administrative positions

The gender imbalance at UNC is also observed in university-governing bodies where male professors assume high-ranking administrative positions more often than female professors.

Each administrative level has a fixed salary. If the allotted salary for a given level is lower than the salary of the professor who will assume the position, they can choose to keep their professor salary (Consejo Superior Universitario, 2008; República de Colombia, 2002). Moreover, professors who carry out these academic-administrative activities in management positions such as rector, vice chancellor, general secretary, administrative director, and dean improve their salaries by earning a few salary points and receiving an additional monthly bonus; for instance, 4.3 MCOP for the chancellor (rector) or 2.7 MCOP for a faculty dean (Consejo Superior Universitario, 2013b).

Out of the 2280 professors in our database, 63 were assuming administrative positions in 2015. With 52 male and 11 female professors in this group, female professors turn out to be underrepresented, given that 29.3 % of professors university-wide are female, but only 17.4 % of high-ranking administrative positions are taken by women. We find that 8 out of 11 female professors and 41 out of 52 male professors improve their salaries when assuming an administrative position, with average salary increases of 31.3 % and 40.4 %, respectively.

4 Conclusions

In this work, we have studied the salary distribution of the 2280 full-time professors at UNC, unveiling an unadjusted GPG of 0.123. By performing a Mincer earnings regression, we established that, even when controlling by confounding variables such as commitment, training level, rank, and area of knowledge, an adjusted GPG of 0.071 remains. Moreover, a variance decomposition analysis carried out by means of a Blinder–Oaxaca decomposition reveals the existence of an unexplained GPG of 0.089. We stress that the partial correlations we find do not necessarily reflect causal effects. Instead, they should be regarded as valuable insights that help us to understand the gender pay gap at UNC.

The global ratio of women among this group of professors stands at 29.3 %, with 32.2 % in Bogotá, the largest seat, and falling to only 22.2 % in both Medellín and Manizales, the next two seats by size. Moreover, the fraction of female professors has also been found to decrease with the increasing rank, going from 33.9 % in the lowest, auxiliary professor category to 20.8 % in the highest, full professor category. Together, these observations suggest the existence of a "leaky pipeline" effect, which begins before women are admitted as professors at UNC, but which continues throughout their academic careers.

We have also an underrepresentation of female professors in areas such as "agro" and "science" that command the two highest mean salaries. The per-department analysis confirms that this is not the main factor causing the GPG, which exists across all areas, and shows the trend of high GPGs in the departments with higher mean salaries.

Our results suggest the presence of a "glass ceiling" effect, where women are mostly excluded from the higher levels of the system, e.g., achieving full professorship, accessing the highest salaries, and joining decision-making bodies.

Finally, we have identified the differential research productivity of male and female professors as the main factor contributing towards the unexplained gender pay gap. Our hypothesis is that the dedication time needed to build a successful research career is not equally available for men and women. Confronting these results with the gender-blind Colombian and university regulations we can infer that the sources of inequity should be related to some aspects of the surrounding society that percolate the otherwise egalitarian environment at UNC.

Our proposal here is to take advantage of this permeability of UNC to society by using it as a laboratory to test public policies on gender equity. To overcome the observed inequalities in the egalitarian ecosystem of UNC, it may not be enough to apply the traditional liberal approach (Johnson, 2014; Roos et al., 2020). Some courageous steps should be implemented as affirmative actions aimed at eliminating less obvious forms of discrimination, firmly rooted in the social, academic, and economic life of the institution to move gender equity forward. The outcome of these actions can become a guide or insight for public policies related to gender issues for future Colombian administrations.

5 Acknowledgements

The authors wish to thank an anonymous Referee and the Editor for their comments, which helped us improve the paper. Our data analysis was performed using the Python libraries NumPy (Harris et al., 2020) and pandas (McKinney, 2010; Reback et al., 2020), and the R package oaxaca (Hlavac, 2018). ER is grateful to Till Tantau and Christian Feuersänger for their excellent LaTeX packages Ti*k*Z and pgfplots. AVL wishes to thank L. Zabala-Velez for her advice and for many enlightening discussions.

6 Appendixes

6.1 Quantifying the Gender Pay Gap

To quantify the *gender pay gap* (GPG) for a group of professors (e.g., the whole university, or a particular department), we use the standard definition

$$\mathrm{GPG} = \frac{S_M - S_F}{S_M},$$

where S_M and S_F are the mean salaries of male and female professors in the group, respectively. This definition gives the difference between mean salaries of male and female professors as a percentage of male earnings. For instance, if a group of professors has $\mathrm{GPG} = 0.2$, this means that the average salary for female professors is 20 % lower than the average salary for male professors in the group. Gender pay gap is usually positive since male professors typically earn more than female professors.

Other common measures for the gender earnings gap can be easily computed from the GPG; for instance, the female-to-male earnings ratio is given by $S_F/S_M = 1 - \mathrm{GPG}$.

6.2 The Colombian Peso

As many others in Latin America, the Colombian currency is called *peso*. Its ISO 4217 currency code is COP. During 2020, the price of 1 USD fluctuated between 3200 COP and 4200 COP, approximately. In this article, we quote salaries in MCOP, with 1 MCOP = 1 000 000 COP being roughly equal to 255 USD as of November 2021.

6.3 Boxplots

In Figure 2, Figure 5, and Figure 7, we use a *boxplot* to show the salary distribution for different groups of professors. A boxplot is constructed of two parts, a box, and a pair of "whiskers." The box is drawn from the first quartile (Q_1, the 25$^{\text{th}}$ percentile) to the third quartile (Q_3, the 75$^{\text{th}}$

percentile) with a vertical line drawn in the middle to denote the median (Q_2, the 50th percentile). The lower whisker is the smallest data value which is larger than $Q_1 - 1.5\,\mathrm{IQR}$, where the *interquartile range* (IQR) is the distance between the first and the third quartile, $\mathrm{IQR} = Q_3 - Q_1$. Similarly, the upper whisker is the largest data value that is smaller than $Q_3 + 1.5\,\mathrm{IQR}$. All data points that fall outside the whiskers are classified as outliers and plotted individually. This means that the central half of the data lies inside the box, while most of the remaining half belongs between the whiskers.

6.4 Sex Ratio

We define the *sex ratio* (SR) for a group of n professors as

$$\mathrm{SR} = \frac{n_M - n_F}{n},$$

where n_M and n_F are the numbers of male and female professors in the group, respectively, with $n = n_M + n_F$. This definition makes SR a quantity that varies from -1 for a female-only group to $+1$ for a male-only group. We find this definition to be more useful for our purposes than the ratio n_M/n_F, which is undefined for male-only groups, where $n_F = 0$.

6.5 Tables

In this Appendix we collect the detailed tables that were left out of the main text for readability reasons.

Table 4 gives a brief outlook of the variables included in our dataset, providing summary statistics for all numerical variables. Categorical variables, which include seat, sex, commitment, training level, academic rank, and area of knowledge, are described in detail in the tables and figures in section 2.

Table 4. Summary statistics for all numerical variables included in our dataset. Column names stand for, respectively, "mean:" arithmetic mean, "min:" minimum value, "25 %:" Q_1, the 25th percentile, "50 %:" Q_2, the 50th percentile or median, "75 %:" Q_3, the 75th percentile, "max:" maximum value, and "std:" standard deviation. Research salary points are denoted by an asterisk.

	mean	min	25 %	50 %	75 %	max	std
Year of birth	1963	1941	1956	1963	1970	1985	—
Year of entry	1997	1967	1992	1998	2005	2015	—
Age in 2015	52.4	30.4	45.4	52.6	59.2	74.9	8.9
Age at entry	34.1	21.0	29.3	33.1	38.0	63.6	6.5
Seniority	18.3	0.9	10.9	17.4	23.9	48.8	9.6
Salary points for…							
Rank	74.0	37.0	74.0	74.0	74.0	96.0	11.7
University degree	178.4	178.0	178.0	178.0	178.0	183.0	1.3
Specialization	4.8	0.0	0.0	0.0	0.0	45.0	9.2
Medical specialization	3.6	0.0	0.0	0.0	0.0	85.0	13.7
Master's degree	28.6	0.0	0.0	40.0	40.0	60.0	19.2
Ph.D.	47.6	0.0	0.0	80.0	80.0	140.0	45.1

Table 4 (continued). Summary statistics for all numerical variables included in our dataset. Column names stand for, respectively, "mean:" arithmetic mean, "min:" minimum value, "25 %:" Q_1, the 25th percentile, "50 %:" Q_2, the 50th percentile or median, "75 %:" Q_3, the 75th percentile, "max:" maximum value, and "std:" standard deviation. Research salary points are denoted by an asterisk.

	mean	min	25 %	50 %	75 %	max	std
Qualified experience	44.7	0.9	32.7	43.0	52.3	159.6	18.4
Cumulative experience	7.3	0.0	0.0	0.0	8.0	171.3	15.0
Articles*	90.2	0.0	6.0	36.0	105.0	1856.5	157.7
Books*	13.5	0.0	0.0	0.0	15.0	307.7	29.4
Book chapters*	14.0	0.0	0.0	2.0	14.0	367.3	30.6
Artworks*	5.0	0.0	0.0	0.0	0.0	673.1	36.2
Awards	1.8	0.0	0.0	0.0	0.0	153.0	7.5
Patents*	0.4	0.0	0.0	0.0	0.0	64.5	3.5
Technical production	0.2	0.0	0.0	0.0	0.0	112.9	3.1
Software*	0.4	0.0	0.0	0.0	0.0	56.8	2.9
Translations	0.2	0.0	0.0	0.0	0.0	24.5	1.4
Videos	0.7	0.0	0.0	0.0	0.0	109.0	4.9
Other	40.0	-22.0	0.0	26.7	61.4	390.7	46.2
Total salary points	555.5	244.7	421.2	497.7	621.2	2715.6	219.4
Salary in 2020 (MCOP)	9.5	4.0	6.9	8.6	10.9	42.9	4.1

In Table 5 we quote the results for the Mincer earnings regression in section 2.2.

Table 5. Regression coefficients for the Mincer earnings function in section 2.2, with $R^2 = 0.64$.

Variable	β	$\exp \beta$
Intercept	1.4103	4.0970
Sex		
Female (reference)	0.0000	1.0000
Male	0.0736	1.0764
Commitment		
Tiempo completo (TC reference)	0.0000	1.0000
Dedicación exclusiva (DE)	0.2695	1.3092
Training level		
University professional (reference)	0.0000	1.0000
Specialization	-0.0386	0.9622
Medical or dentistry specialization	-0.0664	0.9358
Master's degree	0.0023	1.0023

Table 5 (continued). Regression coefficients for the Mincer earnings function in section 2.2, with $R^2 = 0.64$.

Variable	β	exp β
Ph.D.	0.1882	1.2071
Academic rank		
Auxiliary professor (reference)	0.0000	1.0000
Assistant professor	0.1509	1.1629
Associate professor	0.3812	1.4640
Full professor	0.7530	2.1234
Area of knowledge		
Agronomy, veterinary, and similar	0.0948	1.0994
Fine arts	0.0979	1.1029
Humanities and social sciences	0.0747	1.0776
Health care	0.0614	1.0633
Economics, administration, accounting, and similar (reference)	0.0000	1.0000
Engineering, architecture, urban planning, and similar	0.0102	1.0103
Mathematics and natural sciences	0.0950	1.0997

Table 6, Table 7, Table 8, Table 9, Table 10, and Table 11 present detailed results, including coefficients ("Coef.") and bootstrapped standard errors (SE) for each explanatory variable, for the various Blinder–Oaxaca decompositions introduced in section 2.3. Omitted indicator variables (TC, uni, auxiliary, and econ) act as reference values. See sections 2.4, 2.5, and 2.6 for the detailed definitions of all variables.

Table 6. Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in total salary between male and female professors. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
(Intercept)	0.0000	0.0000	-0.7047	0.5780	0.0000	0.0000
DE	0.0685	0.0511	0.0065	0.1360	0.0003	0.0085
special	-0.0012	0.0082	-0.0108	0.0246	-0.0028	0.0096
med	-0.0311	0.0205	0.0468	0.0351	0.0188	0.0185
master	0.0465	0.0348	0.2565	0.1941	-0.0432	0.0386
phd	0.0032	0.0149	0.8704	0.2937	0.0126	0.0393
assistant	-0.0200	0.0146	-0.0046	0.0490	0.0007	0.0091
associate	-0.0651	0.0553	0.2553	0.2243	-0.0090	0.0129
full	0.3658	0.1049	0.1280	0.0782	0.0694	0.0464
agro	0.0066	0.0067	0.0023	0.0204	0.0007	0.0073
art	-0.0070	0.0081	-0.0236	0.0267	0.0041	0.0073
human	-0.0051	0.0076	-0.0623	0.0404	0.0160	0.0126

Table 6 (continued). Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in total salary between male and female professors. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
health	0.0243	0.0194	0.0619	0.1111	-0.0327	0.0595
eng	-0.0667	0.0241	0.0243	0.0371	0.0190	0.0301
science	0.0218	0.0166	-0.0295	0.0736	-0.0037	0.0119
(Base)	-0.0149	0.0091	0.0104	0.0082	0.0058	0.0062

Table 7. Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in total salary between male and female full professors. To avoid computational errors, we have omitted from the analysis the five full professors with "special" or "uni" training levels. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
(Intercept)	0.0000	0.0000	1.4410	1.2970	0.0000	0.0000
DE	0.4877	0.2498	-0.9579	0.8928	-0.2078	0.2504
med	0.0651	0.1302	0.0559	0.2448	-0.0134	0.1078
phd	0.1683	0.2430	1.6042	1.0684	0.4248	0.3630
agro	-0.1474	0.0523	0.0328	0.0355	0.1646	0.0905
art	0.0165	0.0251	-0.0059	0.0961	0.0043	0.0825
human	-0.0062	0.0370	-0.1950	0.1490	0.0528	0.0802
health	-0.0917	0.1191	0.2073	0.7076	-0.0852	0.3060
eng	-0.1231	0.1252	0.1487	0.1347	0.1105	0.1703
science	0.3426	0.3418	-0.6860	0.4453	-0.2051	0.2704
(Base)	-0.0090	0.0244	0.0017	0.0550	0.0006	0.0404

Table 8. Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in total salary between male and female associate professors. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
(Intercept)	0.0000	0.0000	-0.2570	0.6670	0.0000	0.0000
DE	0.0446	0.0612	0.1992	0.1433	0.0070	0.0129
special	-0.0003	0.0098	-0.0248	0.0334	-0.0047	0.0147
med	-0.0189	0.0156	0.0258	0.0258	0.0142	0.0183
master	0.0064	0.0240	0.1911	0.2374	-0.0058	0.0279
phd	-0.0214	0.0274	0.7035	0.3790	-0.0397	0.0454
agro	0.0054	0.0089	0.0035	0.0258	0.0006	0.0070

Table 8 (continued). Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in total salary between male and female associate professors. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
art	-0.0065	0.0127	-0.0418	0.0340	0.0050	0.0120
human	-0.0063	0.0081	-0.0267	0.0411	0.0063	0.0109
health	0.0261	0.0228	0.0530	0.0720	-0.0305	0.0422
eng	-0.0611	0.0266	-0.0081	0.0385	-0.0067	0.0309
science	0.0112	0.0110	-0.0013	0.0705	-0.0002	0.0114
(Base)	-0.0269	0.0146	0.0132	0.0109	0.0127	0.0112

Table 9. Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in non-research salary between male and female professors. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
(Intercept)	0.0000	0.0000	-0.2315	0.2839	0.0000	0.0000
DE	0.0476	0.0351	-0.0038	0.0595	-0.0002	0.0039
special	0.0023	0.0040	-0.0092	0.0108	-0.0024	0.0044
med	-0.0055	0.0054	0.0088	0.0114	0.0035	0.0056
master	0.0068	0.0128	0.0928	0.0760	-0.0156	0.0153
phd	0.0050	0.0149	0.0011	0.1155	0.0000	0.0054
assistant	-0.0158	0.0120	0.0603	0.0314	-0.0095	0.0089
associate	-0.0415	0.0350	0.3075	0.1418	-0.0108	0.0110
full	0.1702	0.0501	0.0606	0.0277	0.0329	0.0174
agro	0.0024	0.0026	0.0018	0.0085	0.0005	0.0030
art	0.0010	0.0019	-0.0124	0.0094	0.0022	0.0029
human	-0.0075	0.0043	-0.0153	0.0160	0.0039	0.0045
health	-0.0129	0.0092	-0.0488	0.0281	0.0258	0.0154
eng	-0.0044	0.0092	0.0119	0.0147	0.0093	0.0117
science	0.0067	0.0052	-0.0361	0.0258	-0.0046	0.0048
(Base)	-0.0075	0.0049	0.0133	0.0057	0.0075	0.0051

Table 10. Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in non-research salary between male and female full professors. To avoid computational errors, we have omitted from the analysis the five full professors with "special" or "uni" training levels. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
(Intercept)	0.0000	0.0000	1.1109	0.2843	0.0000	0.0000
DE	0.3053	0.1695	-0.3679	0.2842	-0.0798	0.0658
med	0.0136	0.0279	-0.0138	0.0524	0.0033	0.0175
phd	0.0561	0.0553	-0.0216	0.2741	-0.0057	0.0905
agro	-0.0106	0.0102	0.0072	0.0084	0.0361	0.0213
art	-0.0141	0.0198	0.0015	0.0377	-0.0011	0.0305
human	-0.0179	0.0258	-0.0951	0.0584	0.0258	0.0343
health	-0.0587	0.0548	-0.3370	0.1443	0.1385	0.0899
eng	0.0129	0.0499	-0.0297	0.0767	-0.0221	0.0646
science	0.0189	0.0347	0.0132	0.0823	0.0039	0.0465
(Base)	-0.0079	0.0221	0.0161	0.0212	0.0059	0.0181

Table 11. Detailed results for a threefold Blinder–Oaxaca decomposition of the difference in non-research salary between male and female associate professors. All values are in MCOP.

	Endowments		Slopes		Interaction	
Variable	Coef.	SE	Coef.	SE	Coef.	SE
(Intercept)	0.0000	0.0000	0.0736	0.2789	0.0000	0.0000
DE	0.0332	0.0420	0.0183	0.0666	0.0006	0.0041
special	0.0021	0.0055	-0.0075	0.0135	-0.0014	0.0051
med	-0.0047	0.0071	0.0094	0.0116	0.0052	0.0086
master	0.0011	0.0075	0.1350	0.0981	-0.0041	0.0133
phd	-0.0215	0.0212	0.0562	0.1614	-0.0032	0.0113
agro	0.0018	0.0031	-0.0012	0.0119	-0.0002	0.0031
art	0.0009	0.0028	-0.0180	0.0129	0.0021	0.0040
human	-0.0054	0.0045	0.0022	0.0184	-0.0005	0.0051
health	-0.0146	0.0103	-0.0079	0.0321	0.0046	0.0184
eng	-0.0112	0.0120	0.0135	0.0181	0.0113	0.0145
science	0.0059	0.0064	-0.0569	0.0304	-0.0065	0.0071
(Base)	-0.0100	0.0081	0.0102	0.0058	0.0098	0.0085

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