Reasons to choose Computing in Brazil: an Intersectional Study across Areas of Interest

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Abstract. *This study examines how multiple factors influence the choice of specific Computing subfields through a questionnaire-based survey. Our analysis follows a three-step approach: gender-based response distribution; intersectional analysis by age, race, and region; and comparative professional profiling. By identifying the factors that attract or discourage women, this work provides insights to inform recruitment and retention strategies.*

1. Introduction

Computing is generally regarded as a hard science and has historically been a white, male-dominated field [Frenkel 1990, Pereira et al. 2024, Viegas et al. 2025]. Studies on gender imbalance in Computing examine this issue from multiple perspectives, with a particular emphasis on education [Bezerra et al. 2023, Misa 2021, Moro 2022]. Within academia and research, prior work shows that women remain substantially underrepresented in authorship [Cohoon et al. 2011, Mattauch et al. 2020] and that Computing subfields exhibit large disparities in faculty gender composition [Laberge et al. 2022].

In Brazil, mapping this gender gap has gained significant traction through nationwide initiatives like Programa Meninas Digitais [Maciel et al. 2018]. Most local research explores macro-level factors that attract, retain, or discourage women in technology [Moro et al. 2023, Novaes et al. 2025, Ribeiro and Maciel 2020, Santos and Marczak 2023], or evaluates female representation in conference committees [Lorens et al. 2020, Carvalho et al. 2023]. Still, a critical gap remains in understanding how intersectional identities shape choices across specific subfields within Computing. Focusing strictly on gender leaves out a richer, more complex context. Intersectionality describes how various forms of inequality (e.g., race, gender, class) operate together and exacerbate each other [Crenshaw 1989]. In Brazil, most research on women in IT remains agnostic to this concept [Amaral and Oliveira 2024, Rodrigues et al. 2025]. Here, we take initial steps toward a more plural study.

Overall, women's participation varies according to the Computing area of interest. We expand on prior work by examining which specific aspects of an area are more attractive to women already studying or working in Computing. Based on a predefined set of factors, we ask: "How has each aspect influenced a person's choice of area within Computing?" We deployed a questionnaire capturing demographics, profession-related metrics, and these influential aspects. We then proceed by:

1. Analyzing the distribution of answers according to the respondents' gender;
2. Including intersectionality based on gender, age, race, and regional profiles; and
3. Building comparative analyses based on the respondents' Computing areas.

The following sections cover related work, methodology, and results. Ultimately, we aim to support targeted initiatives to attract more girls and women to Computing by highlighting opportunities within specific subfields, while providing insights to retain and help those already in the area thrive.

2. Related Work

As aforementioned, the seminal study [Cohoon et al. 2011] focuses on female authorship across more than 86,000 publications. It shows that female progress is *not homogeneous across areas*: conferences related to HCI, documentation, education, and management display significantly higher rates of women's participation. This conclusion is corroborated by newer studies on authorship in Computing conferences in both the Global North [Mattauch et al. 2020, Van Herck and Fiscarelli 2018] and Brazil [Carvalho et al. 2023].

Also, the profile of Brazilian Computing research reveals an imbalance in the distribution of women across areas. Over the years, the female-to-male participation rate on the Technical Program Committees of Brazilian symposia has followed stable patterns [Duarte et al. 2019, Lorens et al. 2020] – e.g., consistently more women in areas with a stronger social interface, such as Informatics in Education, HCI, and Collaborative Systems, and fewer women in fields like Cybersecurity and Hardware.

Other studies provide a more granular view of attraction mechanisms. The influence of male role models (e.g., fathers, brothers) is identified as a primary catalyst for women's interest in Information Systems [Serapiglia and Lenox 2010]. Attraction to Computing is often driven by a natural affinity for problem-solving and for the challenges posed by a constantly evolving field [Bezerra et al. 2023]. In Brazil, early exposure through practical activities (e.g., robotics, game development, mobile programming) is also key to sparking interest and deconstructing the stereotype of Computing as a male domain [Martins et al. 2019, Menezes and Santos 2021]. Perceptions of financial security, high employability, and professional success are consistently cited as motivators for choosing a Computing career [Bezerra et al. 2023, Novaes et al. 2025].

A more recent literature review [Santos and Marczak 2023] shows that women entering Computing (*attraction*), remaining in it (*persistency*), and leaving it (*departure*) do so as a result of a set of interconnected factors. Attraction factors (the focus of our work) include the influence of others (especially family members, teachers, and female role models), prior interest in technology, mathematics, and STEM fields, as well as positive expectations regarding career prospects, employability, social mobility, and financial return. Persistency is associated with access to support networks and communities for women in IT, among other factors; departure results from a combination of sociocultural barriers, academic difficulties, lack of support, and other challenges. Notably, intersectionality is still not addressed in this body of work.

In this study, we seek to identify the specific mechanisms that shape women's participation across different Computing areas of interest. To this end, we employ a threefold approach based on gender distribution, intersectional variables, and professional profiling. Our results highlight how the perceived attractiveness of different specializations interacts with these factors, offering actionable insights for institutional outreach programs.

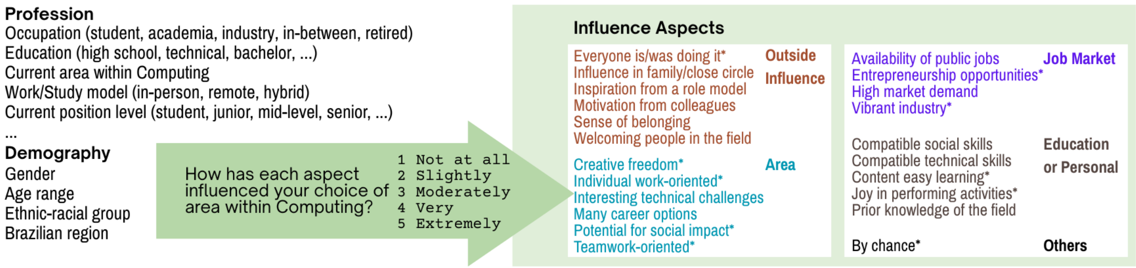


Figure 1. Overall questionnaire design

3. Methodology

This section details the methodology employed to investigate female influences across Computing areas. The study comprises four primary stages: research design and rationale (§3.1); instrument development (§3.2); participation and sampling (§3.3); and data collection (§3.4). The subsequent section (§4) presents and discusses the empirical results.

3.1. Research Design and Rationale

The objective of this study is to systematically gather data from Brazilian Computing students and professionals to conduct an intersectional analysis across diverse areas of interest within the field. The study adopts a quantitative survey research design to efficiently capture the factors that attract individuals to specific subfields of Computing.

Ethical Safeguards. To ensure data integrity and participant protection, participation was strictly voluntary and restricted to individuals of legal age. No identifying information was collected, thereby guaranteeing complete anonymity. Furthermore, the instrument provided flexibility by including options such as "prefer not to say" or "others" across multiple questions, allowing participants to maintain privacy.

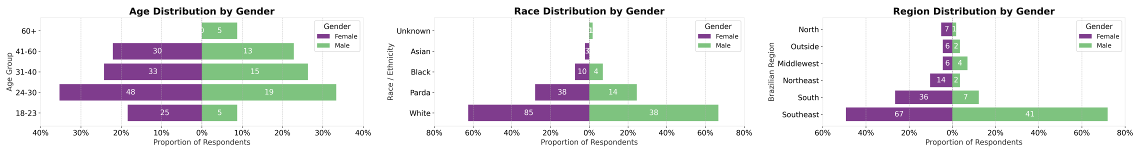
3.2. Instrument Development

Administered as an online questionnaire, this methodology enables statistical analysis and the potential generalization of findings regarding the target population of women and men studying or working in Computing. Additionally, the online format facilitated access to a large, geographically dispersed sample, optimizing the quantification of participant attitudes and perceptions.

Structure and Content. The questionnaire starts with our research information (title, justification and goal, focus, expected benefits, data handling and team) followed by a Written Informed Consent form, whose agreement is mandatory to continue. Then, it has three sections (Figure 1):[1] profession (occupation, education, and so on), demographics (gender, age, race, localization), and a list of influence aspects. The list has 22 items in four categories (plus an "Others"), mostly inspired by the literature review [Santos and Marczak 2023]. The differences are: their list has 43 factors on Computing as a whole; ours is a focused composition tailored to differentiate Computing areas; and its includes ten original items – marked with an asterisk (*) in Figure 1.

Validation. Structure, content and consent form were also validated through a pilot testing by four University students, and three professionals. Small updates were then performed.

[1] The actual questionnaire included another qualitative part that is out of the scope of this paper.



Obs: absolute values within bars; size of bars is proportional to 136 women and 57 men; "Outside" means living abroad.

Figure 2. Diverging bar plots by gender: age, race and Brazilian region

Limitations. Using an online form as data collector excludes those with limited (or no) internet access. There are no guarantees on the effectiveness of the distribution strategies, nor can we technically ensure that a participant did not respond more than once. Also, the sample is mostly composed of women and features a high level of education among respondents – both of which do not mirror the Brazilian Computing landscape. The analyzed factors were selected by the authors based on related literature and personal experience. Some target populations were underrepresented (e.g., Asian and Black women). Still, the set of answers enabled some original, interesting insights.

3.3. Participants and Sampling

The target population consists of Brazilian Computing students and professionals who: (i) have established a specific area of interest, (ii) reside either within one of the five Brazilian regions or abroad, and (iii) represent diverse demographic backgrounds. To recruit participants, invitations were distributed through email lists, instant messaging groups (WhatsApp), personal networks, and social media announcements. A total of 200 individuals completed the questionnaire: 136 female, 57 male, and seven who identified as non-binary or preferred not to disclose their gender. Then, 193 responses were selected for analysis, as this study focuses on binary gender classification to ensure comparability with existing literature. Figure 2 summarizes the demographic characteristics of the respondents stratified by gender: age (left), race (center), and geographic region (right).

3.4. Data Collection

The consent form included the following clause: "Information obtained may be published, with guaranteed anonymization of data and privacy, preventing the identification of participants." The survey remained active online for one month on the Google Forms platform. The collected responses were exported to a CSV file for processing via Google Colab. The data file contains no personally identifiable information and is not publicly accessible.

4. Analysis and Results

Using data from 193 respondents, we address four main questions: (i) what factors women value most when choosing a Computing area; (ii) how their choices differ from men's; (iii) how demographic traits affect these choices; and (iv) whether the area links to influence factors. Figure 3 outlines the study design, with results organized as follows.

- **Comparative Analysis by Gender (§4.1)** presents the initial visualization of the Likert scales, followed by a ranking of aspects based on positive responses to identify what women value most and least. Statistically divergent factors are identified using Welch's *t-test* and the Mann-Whitney *u-test*, reporting their respective *p-values*.[2]

[2] Welch's *t-test* evaluates significant differences between the means of two independent groups, whereas the Mann-Whitney *u-test* compares rank distributions without assuming normality. The *p-value* determines the probability that the observed differences occurred under the null hypothesis.

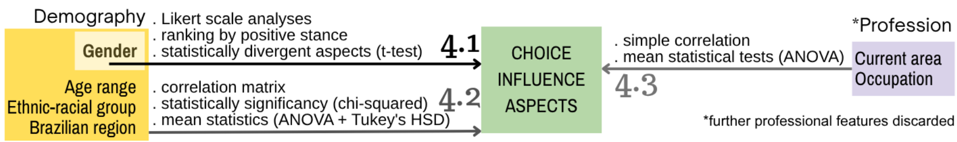


Figure 3. Overview of study design and results presentation

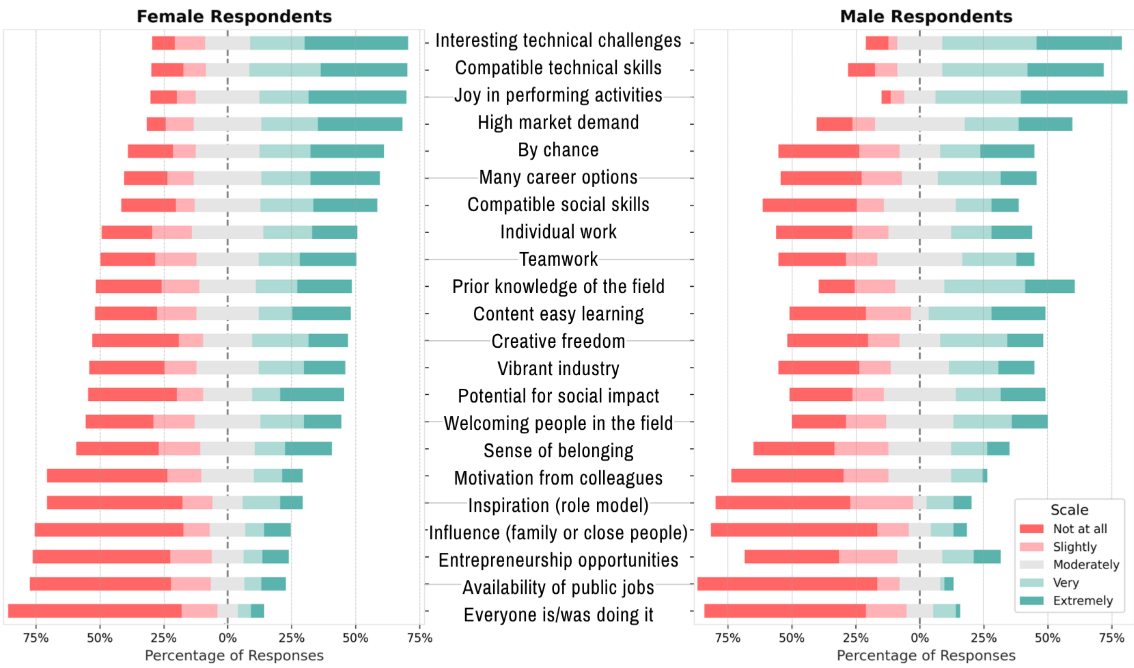


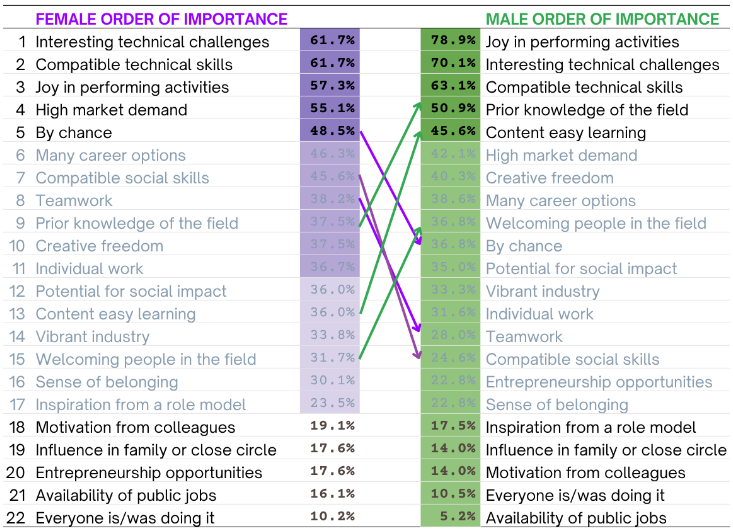
Figure 4. Influence aspect for choosing an area, by gender

- **Intersectional Analysis (§4.2)** provides a baseline correlation matrix of demographic attributes (age, race, and geographic region) stratified by gender. Statistically significant relationships between participant profiles and influential factors are assessed via Chi-squared (χ^2) tests of independence,[3] supplemented by conditional analyses for intersectional profiles using Analysis of Variance (ANOVA)[4] and Tukey's Honestly Significant Difference (HSD) post-hoc test.[5]
- **Analysis by Professional Profile (§4.3)** informs results across Computing subfields.

4.1. Comparative Analysis by Gender

We first evaluate the factors that influence people when choosing a Computing area (e.g., databases or theory). Figure 4 shows the Likert scale results, with one bar per factor, sorted by female preferences. In these bars, "not at all" and "slightly" show a negative view (low influence); "moderately" is neutral; and "very" or "extremely" show a positive view (high influence). Although the main patterns look similar across genders, clear differences appear in factors like *joy in performing activities*, *potential for social impact*,

[3]Chi-squared tests (χ^2) assess the statistical independence/association between two categorical variables.
[4]ANOVA tests compare means across multiple groups simultaneously to mitigate the family-wise error rate associated with multiple *t-tests*.
[5]Tukey's HSD test is applied post-ANOVA to identify specific pairs of means that exhibit statistically significant differences.



	FEMALE ORDER OF IMPORTANCE			MALE ORDER OF IMPORTANCE
1	Interesting technical challenges	61.7%	78.9%	Joy in performing activities
2	Compatible technical skills	61.7%	70.1%	Interesting technical challenges
3	Joy in performing activities	57.3%	63.1%	Compatible technical skills
4	High market demand	55.1%	50.9%	Prior knowledge of the field
5	By chance	48.5%	45.6%	Content easy learning
6	Many career options	46.3%	42.1%	High market demand
7	Compatible social skills	45.6%	40.3%	Creative freedom
8	Teamwork	38.2%	38.6%	Many career options
9	Prior knowledge of the field	37.5%	36.8%	Welcoming people in the field
10	Creative freedom	37.5%	36.8%	By chance
11	Individual work	36.7%	35.0%	Potential for social impact
12	Potential for social impact	36.0%	33.3%	Vibrant industry
13	Content easy learning	36.0%	31.6%	Individual work
14	Vibrant industry	33.8%	28.0%	Teamwork
15	Welcoming people in the field	31.7%	24.6%	Compatible social skills
16	Sense of belonging	30.1%	22.8%	Entrepreneurship opportunities
17	Inspiration from a role model	23.5%	22.8%	Sense of belonging
18	Motivation from colleagues	19.1%	17.5%	Inspiration from a role model
19	Influence in family or close circle	17.6%	14.0%	Influence in family or close circle
20	Entrepreneurship opportunities	17.6%	14.0%	Motivation from colleagues
21	Availability of public jobs	16.1%	10.5%	Everyone is/was doing it
22	Everyone is/was doing it	10.2%	5.2%	Availability of public jobs

Figure 5. Ranking by positive stance (i.e., "very" plus "extremely" answers)

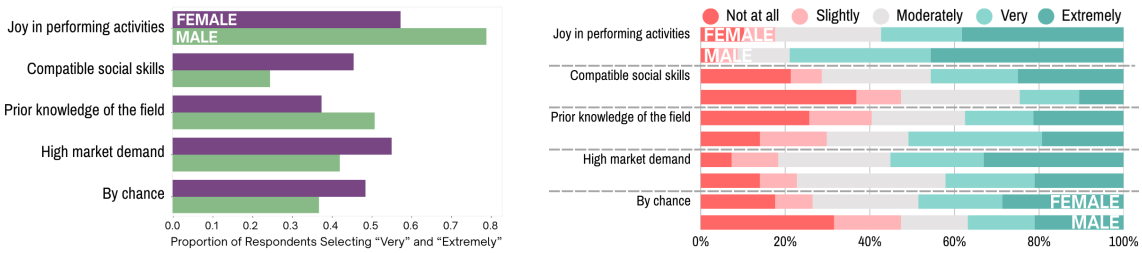


Figure 6. Top-5 most diverging aspects by positive stance

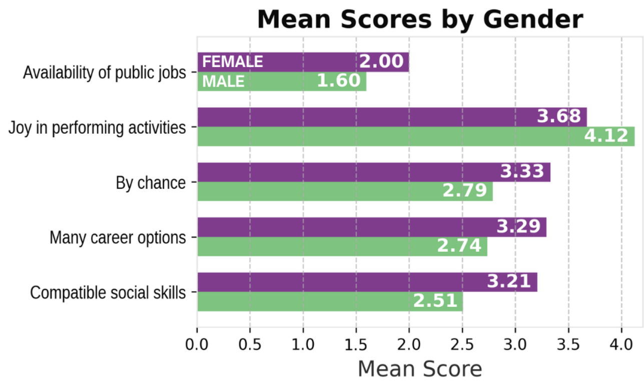
prior knowledge of the field, and *availability of public jobs*. While visual checks show quick trends, these plots are here for completeness. The statistical analysis starts next.

Factor Ranking by Positive View. To help see the results, we ranked the factors by summing the "very" and "extremely" answers for each gender. Figure 5 shows this ranking. Factors with a gap of five or more positions between genders are marked with arrows. Figure 6 details the top-5 most divergent factors, showing the share of respondents (left) and the actual Likert answers (right) as a close-up of Figure 4.

When choosing an area within Computing, the data show that:

- For both genders, the three <u>most</u> critical factors are *interesting technical challenges*, *compatible technical skills*, and *joy in performing activities*. The <u>least</u> critical include *everyone is/was doing it*, *availability of public jobs*, *influence of family or close circle*, and *motivation from colleagues*.
- Relatively, women care <u>more</u> about fields that require *compatible social skills*, involve *teamwork*, or offer opportunities that come *by chance*.
- In contrast, compared to men, women give <u>less</u> weight to *prior knowledge in the field*, *ease of learning content*, and *welcoming people in the field*.

Overall, the low score for social and peer influences is surprising, since past work shows that other people heavily affect career choices [Santos and Marczak 2023]. However, note that our survey asks about choosing an area within Computing, not the career itself. We argue that picking Computing over Law, Medicine, or Sociology is a bigger,



T-statistic	p-value	U-statistic	p-value
2.2302	0.0274	4502.0	0.0458
-2.4789	0.0144	3185.0	0.0410
2.2582	0.0262	4639.5	0.0272
2.4170	0.0175	4691.0	0.0186
3.1367	0.0022	4921.5	0.0024

Statistically different aspects with p-value < 0.05

Figure 7. Statistically different aspects by gender: comparison of mean scores (left), and comparison of t-test and Mann-Whitney u-test values and p-values (right)

harder decision than choosing a specific subfield after you are already in Computing.

Statistically divergent results. Now, are these preferences *statistically* different? To find out, we run a *t-test* and a *u-test* for each factor to evaluate differences between female and male choices. Both tests use a significance level of 0.05 (95% confidence interval). Figure 7 shows the results in two parts: the left side compares the mean scores by gender for the five statistically different factors, while the right side displays the actual values for the *t-statistic*, *u-statistic*, and their *p-values*. As both tests yield the same significant results, they provide strong evidence of a true difference between genders on these five factors.

All other factors *did not show a statistically significant difference between genders* — even those that *appeared* to differ in the ranking analysis (Figure 5) and the top-5 divergent results (Figure 6). Among the statistically different factors, compared to men, female respondents place more value on social compatibility (*compatible social skills*), career breadth (*many career options*), and even chance. Conversely, they give less weight to *joy in performing activities*. This result suggests fundamental differences in what drives individuals of different genders into a Computing field.

4.2. Intersectional Analysis

We begin by pairing gender with age, race, and region as conditioning variables. We then calculate Spearman's rank correlation (which is well-suited for non-normal distributions and mixed variables) using the 1–5 Likert scale responses. Due to space limits, Figure 8(**A**) shows only the top two/bottom values for each intersectional group. There are three factors common to both genders but within distinct groupings: *compatible social skills*, *availability of public jobs*, and *many career options*. Next, Figure 8(**B**) presents the *p-values* for the statistically significant correlations. For women, age correlates with *influence*, while region correlates with *availability of public jobs* and *compatible technical skills*. No significant correlations were found for male respondents.

Statistically significant associations. Although Spearman's ρ measures how strongly variables relate, it can miss non-linear relationships. Hence, we rely on χ^2 tests to check for general categorical associations ($p < 0.05$), as shown in Figure 8(**C**).

- **Common associations**, both genders show strong links between age and *potential for social impact*, and between different profile variables and *joy*.

(A) Spearman's Rank Correlations (top-2 Spearman Rho values of each group)

Female Respondents

	Age	Race	Reg.
Influence (family or close people)	-0.20		
Many career options	-0.17		
Entrepreneurship opportunities		-0.15	
Potential for social impact		-0.16	
Availability of public jobs			-0.26
Compatible technical skills			0.23

Male Respondents

	Age	Race	Reg.
Compatible social skills	-0.17		
Prior knowledge of the field	0.19		
Availability of public jobs		-0.18	
Individual work		-0.20	
Many career options			-0.21
Sense of belonging			-0.25

(B) Statistically Significant Spearman's Rank Correlations

Female Respondents

	Age	Race	Reg.
Influence (family or close people)	0.0179		
Availability of public jobs			0.0026
Compatible technical skills			0.0083

Male Respondents

Age	Race	Reg.
	none	

Obs: only $p < 0.05$ are informed

(C) Significant CHI-squared association p-values

Female Respondents

	Age	Race	Reg.
Availability of public jobs		0.0048	0.0147
Joy in performing activities	0.0028		
Creative freedom	0.0220		0.0308
Motivation from colleagues	0.0359		
Potential for social impact	0.0404		

Male Respondents

	Age	Race	Reg.
By chance	0.0462		
Everyone is/was doing it	0.0374		
Potential for social impact	0.0411		
Joy in performing activities		0.0003	

Obs: only $p < 0.05$ are informed

(D) Significant ANOVA means p-values

Female Respondents

	Age	Race	Reg.
Creative freedom	0.0188		
Joy in performing activities	0.0273		
Welcoming people in the field	0.0342		
Entrepreneurship opportunities		0.0065	
Sense of belonging			0.0225
Availability of public jobs			0.0002

Male Respondents

	Age	Race	Reg.
Compatible technical skills	0.0266		

Obs: only $p < 0.05$ are informed

Figure 8. Intersectional correlation and association results

– **Age range** has significant associations with *creative freedom* and *motivation from colleagues* for women, and with *fashion* and *by chance* for men.
– **Ethnic-racial group** shows strong links to *public jobs* for women and to *joy* for men.
– **Brazilian region**, the influence of *public jobs* and *creative freedom* shows significant variation across regions for women as well.

The relevance of factors varies across intersectional groups. These results reinforce that there is *no* "one-size-fits-all" approach when promoting Computing areas to women.

Intensity analysis. All three profile variables (age, race, region) showed correlations and associations, but with varying degrees and types of influence when combined with gender. We now complement these findings by running ANOVA tests, which allow us to evaluate the magnitude of perceived influence (from "not at all' to "extremely'). Results are illustrated in Figure 8(**D**). We also used Tukey's HSD to identify statistically significant pairwise differences ($p < 0.05$).

– **Age** affects how women value three factors: *creative freedom* is highly valued by the 18–23 and 31–40 age groups, while *welcoming people in the field* and *joy in performing activities* are more critical to the 31–40 and 41–60 age groups. For men, the value of *compatible technical skills* is higher in the 60+ age group.
– **Race** changes how women assess *entrepreneurship opportunities*, with Asian respondents rating it significantly higher (4.67) than Black (2.30), Parda (2.05), and White (1.92) respondents.
– **Brazilian region** shows influence on two factors: women from the Midwest valued *availability of public jobs* significantly more, while those from the North valued *sense of belonging* significantly more than all other groups.

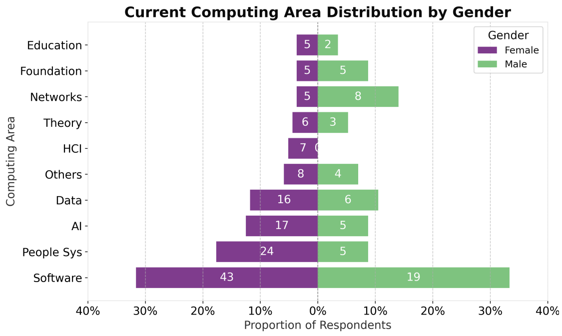
4.3. Comparative Analyses by Computing Area

Now, we analyze how the answers behave according to the respondents' Computing area. Since some areas had only one or two respondents, they were grouped into larger, more representative categories. Hence, the 24 distinct Computing areas selected by the respondents (out of nearly 40 options) were mapped to 10 broad areas, as shown in Table 1. Figure 9 displays their distribution by Computing area, stratified by gender.

Statistical tests (including χ^2 and ANOVA) between the respondents' chosen areas and the influential factors revealed *no statistically significant differences* ($p < 0.05$).

Table 1. Computing areas

Comp.Area	Single area / Aggregated areas*
AI	Artificial Intelligence
Data	Databases and Data Science
HCI	Human-Computer Interaction
Networks	Computer Networks and Distributed Sys.
Software	Software Engineering
Education*	Computing Education, Informatics in Education
Foundation*	Programming Languages and Compilers, Information and Sys Security
Theory*	Algorithms, Combinatory and Optimization, Formal Methods
People Systems*	Collaborative Sys, Information Sys, Multimedia and Web Sys, Games and Digital Entertainment, Natural Language Processing
Others*	(up to two respondents) Computational Biology, Applied Computing in Health, Computer Graphics and Image Processing, Integrated Circuit and Sys Design, Computer Systems Engineering, Geoinformatics, Robotics



Obs: absolute values within bars; proportions of 136 women, 57 men.

Figure 9. Area by gender

Table 2. Distribution of median (left) and average (right) values for women by area

Median (left):

	n	challenges	joy	technical skills	market demand	by chance	social skills	career options	easy learning	teamwork	welcoming	individual work	prior knowledge	creative freedom	social impact	belonging	vibrant industry	inspiration	motivation	public jobs	influence	entrepreneurship	fashion
Education	**5**	5.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	3.0	3.0	2.0
People Sys	**24**	4.0	4.0	4.0	4.0	3.5	3.0	4.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.5	2.0	1.0
Data	**16**	4.5	4.5	4.0	4.5	3.5	3.0	4.0	3.5	3.0	4.0	3.0	3.5	2.5	1.5	3.0	2.5	1.0	1.5	2.0	1.0	1.0	1.0
AI	**17**	5.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	1.0	1.0	1.0	1.0	1.0
Theory	**6**	5.0	4.5	4.0	3.5	3.0	3.5	3.0	4.0	3.5	3.0	3.0	1.5	3.0	1.5	2.5	2.0	1.0	2.0	1.5	1.0	1.5	1.5
HCI	**7**	3.0	4.0	3.0	3.0	5.0	3.0	3.0	2.0	3.0	3.0	1.0	3.0	3.0	4.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0	1.0
Software	**43**	4.0	4.0	4.0	4.0	3.0	3.0	4.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	3.0	1.0	1.0	1.0	1.0	1.0	1.0
Foundation	**5**	4.0	3.0	4.0	3.0	1.0	3.0	3.0	2.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	1.0	2.0	1.0	1.0
Others	**8**	3.5	3.0	3.5	3.0	3.0	3.5	2.5	2.0	2.5	3.0	3.5	3.0	3.0	1.5	1.0	2.0	1.5	1.0	1.5	1.0	1.0	1.0
Networks	**5**	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	1.0	3.0	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Average (right):

challenges	joy	technical skills	high demand	by chance	social skills	career options	easy learning	teamwork	welcoming	individual work	prior knowledge	creative freedom	social impact	belonging	vibrant industry	inspiration	motivation	public jobs	influence	entrepreneurship	fashion	
4.4	4.0	4.6	4.0	4.0	4.2	4.0	3.8	3.6	3.6	3.8	3.8	3.2	4.2	3.2	3.4	3.4	2.6	3.4	2.8	3.2	2.0	Education
3.8	3.7	3.6	3.8	3.6	3.3	3.5	3.0	3.4	2.9	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.6	2.1	2.6	2.3	1.8	People Sys
3.6	4.0	3.4	4.1	3.4	2.9	3.8	3.2	3.3	3.4	3.2	3.4	2.6	2.4	2.9	2.8	1.9	2.1	2.2	1.8	1.8	1.7	Data
4.1	4.1	3.6	3.7	3.5	3.4	3.1	2.9	2.7	3.2	3.4	2.7	3.0	2.8	2.7	3.1	2.1	1.9	1.8	1.8	1.9	2.0	AI
4.2	3.8	3.7	3.0	2.8	3.2	2.8	3.2	3.7	2.8	3.0	2.2	2.8	2.0	2.5	2.2	1.5	2.0	2.0	1.3	2.0	1.8	Theory
3.3	3.7	3.0	3.3	3.9	3.1	3.1	2.6	2.6	2.6	1.9	2.7	2.4	3.7	2.9	2.7	2.7	2.4	1.6	2.6	2.6	2.0	HCI
3.7	3.5	3.8	3.7	3.3	3.3	3.4	3.0	3.1	2.3	2.8	2.9	2.7	3.0	2.5	2.9	2.1	2.2	1.9	2.0	2.1	1.5	Software
3.8	3.2	3.6	3.0	2.0	2.8	2.8	2.6	2.2	2.8	2.6	3.2	2.0	2.2	2.2	2.4	2.0	2.2	1.6	2.0	1.6	1.6	Foundation
3.6	3.4	2.9	3.3	3.0	2.8	2.8	2.3	2.3	2.6	3.1	3.4	2.9	2.4	2.3	2.3	2.1	1.8	2.5	1.5	1.4	1.0	Others
2.8	3.4	3.4	2.4	2.6	3.0	1.8	2.6	2.6	2.2	3.2	1.8	1.8	2.2	2.4	1.0	1.0	1.8	1.4	1.4	1.2	1.0	Networks

Nevertheless, analyzing how women across distinct Computing areas value these 22 factors can still shed light on the core elements that attract women to the field. Table 2 presents the median and average values for female respondents across all factors, grouped by Computing area. For Likert scale data, the median is generally more appropriate and statistically accurate since the data are ordinal (responses range from 1 to 5). Consequently, a median score of 4 means that at least half of the respondents consider the factor *very important*, while a 5 indicates it is *extremely important*. The average values are included to add further nuance and context to these medians.

– As a subfield, Education attracts women for multiple reasons, ranging from *interesting technical challenges* to *ease of learning content*;
– *Interesting technical challenges* also strongly attract women to AI and Theory; and
– Data areas attract women due to *high market demand* and *joy in performing activities*.

Overall, women value distinct features depending on their chosen area. Here, the main takeaway is that a strategic combination of these diverse factors can help attract more female talent to Computing by highlighting different subfields. No matter what interests a high school girl or a young woman, she can find her place to study and work within Computing—building a successful career, making a difference, and finding fulfillment.

5. Concluding Remarks

This study sought to investigate the factors that influence the selection of a Computing subfield in Brazil through a nationwide intersectional analysis. The primary outcome is a strategic framework designed to foster initiatives for attracting and retaining women in Computing, as summarized in Table 3: (**A**) the factors women value most and least

Table 3. All results packed together into one table

		(A) BY GENDER						(B) INTERSECTIONAL																		(C) COMP.AREAS	
								correlation p>0.05						chi-squared						ANOVA							
		Ranking		top-5 dvgt		t-test		F			M			F			M			F			M			larger influence	
Category	Aspect	F	M	F	M	F	M	age	race	reg.	age	race	reg.	age	race	reg.	age	race	reg.	age	race	reg.	age	race	reg.	area 1	area 2
Outside Influence	Everyone is/was doing it*	×	×														☑(M)										
	Influence in family/close circle	×	×					☑(F)																			
	Inspiration from a role model																										
	Motivation from colleagues		×											☑(F)													
	Sense of belonging												☑(M)									☑(F)					
	Welcoming people in the field																			☑(F)							
Area	Creative freedom*													☑(F)		☑(F)				☑(F)							
	Individual work-oriented*											☑(M)															
	Interesting technical challenges	⇧TOP	⇧TOP																							Education	Theory
	Many career options					△	▴	☑(F)					☑(M)														
	Potential for social impact*								☑(F)					☑(F)			☑(M)									Education	
	Teamwork-oriented*																										
Job Market	Availability of public jobs	×	×			△	▴			☑(F)		☑(M)			☑(F)	☑(F)						☑(F)					
	Entrepreneurship opportunities*	×							☑(F)												☑(F)						
	High market demand	⇧TOP		△	▴																					Data	
	Vibrant industry*																										
Education or Personal	Compatible social skills			△	▴	△	▴				☑(M)															Education	
	Compatible technical skills	⇧TOP	⇧TOP							☑(F)													☑(M)			Education	Software
	Content easy learning*																									Education	
	Joy in performing activities*	⇧TOP	⇧TOP	▴	△	▴	△							☑(F)				☑(M)		☑(F)						Education	Data
	Prior knowledge of the field		⇧TOP	▴	△						☑(M)																
Others	By chance*			△	▴	△	▴										☑(M)									Education	HCI

⇧TOP at the top; × at the bottom; △ larger proportion of positive stance; ▴ smaller proportion of positive stance; ☑(F) female significant variance; ☑(M) male significant variance

relative to men (§4.1); (**B**) the intersectional nuances within these factors (§4.2); and (**C**) the alignment between specific Computing subfields and these influential factors (§4.3). The empirical evidence demonstrates that gender and intersectionality significantly influence the distribution of participant opinions. These insights provide invaluable data for targeted initiatives, such as those led by the partner projects of the Programa Meninas Digitais. Recommended actions include:

- *Outreach efforts* tailored to resonate with young girls by emphasizing broad career opportunities, welcoming environments, joyful experiences, and creative freedom;
- *Persistence initiatives* to guide undergraduate and graduate students toward specific Computing areas by highlighting high market demand and the potential for social impact; and
- *Targeted support programs* to improve professional retention by fostering environments where social skills and diverse career pathways are explicitly valued. These actions can be geographically customized; for instance, initiatives in the Midwest region should incorporate discussions regarding the availability of public sector employment.

Future research should investigate: (*i*) how additional professional variables (e.g., work/study modalities and seniority levels) correlate with these influential factors; and (*ii*) the qualitative data from the survey to contextualize the systemic elements contributing to demographic differences and specific workplace experiences.

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