

Job Situation of ETH Alumni

Results of the ETH Alumni Survey

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Results of the ETH Alumni Survey

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Chapter 1

Introduction

How do ETH alumni fare in the world of work? How satisfied are they with their job and how much do they earn? Do they think that they perform interesting tasks? How many are in a leadership position? And are there differences between female and male graduates? This report answers these and related questions by summarizing the key findings of an incentivized online survey among ETH alumni that we fielded between November 2019 and January 2020. The survey is the result of a joint initiative between researchers from the KOF Swiss Economic Institute, the ETH Alumni Association, and kununu, an online labor market platform specialized in employer ratings (www.kununu.com). The aim of the survey was to better understand the labor market situation of ETH alumni. In the future, the survey data will be used as a basis for research projects at KOF that will be enriched with data from kununu.

The results documented in this report are based on a sample of 2'657 respondents, representing a response rate of 8.2% to the survey. Importantly, three out of four respondents graduated within the last twenty years. Moreover, the survey was targeted to individuals living in the German-speaking countries (Austria, Germany, and Switzerland). 88% of respondents work in Switzerland. Finally, since the survey is concerned with the job situation in the current or last job, the survey is likely to under-represent alumni that did not participate in the labor market for longer. The questionnaire of the survey is contained in Appendix A (in German).

The following report has two further chapters. The second chapter documents the job situation of ETH alumni. It provides information on the sample of survey participants, their occupations, salaries, job satisfaction, and leadership responsibilities. It also docu-

ments various further aspects of their jobs such as their work-life balance and the extent to which they perceive to have a job with interesting tasks. Overall, most ETH alumni are satisfied or very satisfied with their current or last job. A large majority states that their job involves interesting tasks. The graduates are, in relative terms, least satisfied with the communication within their company and with their possibilities for continued education. The average monthly wage adjusted for full-time equivalents is around 10'150 Swiss Francs. We differentiate these analyses by occupation and by field of study. We find, for instance, that ETH graduates predominantly work in technical occupations, in research and development, and managerial occupations.

The third chapter shows that there are important differences in the labor market situation of male and female graduates of ETH. For instance, we find a sizeable pay gap between men and women. In addition, female graduates of ETH are much more likely to work part-time and less likely to be in a leadership position. These results mirror well-known gender differences in the (Swiss) labor market. In part, they also reflect the fact that the female respondents have less work experience and are on average younger than the male respondents. However, even if we decompose the pay gap and account for differences between male and female graduates along these and other observed dimensions, we still find a statistically significant (unexplained) pay gap of 7% between male and female graduates.

Chapter 2

Working Conditions of ETH Alumni

This chapter characterizes the working situation of the ETH alumni that participated in the survey. In the first section, we describe the characteristics of the sample of respondents and compare it to the population of ETH alumni that were asked to participate in the survey. In the following sections, we discuss respondents' wages, level of job satisfaction, and working conditions, as well as the extent to which they are in leadership positions.

2.1 Sample and Population Characteristics

A total number of 2'657 people have responded to the survey. The online survey was sent to 32'417 ETH alumni living in German-speaking countries. The response rate of the survey is thus 8.2%. As shown in Table 2.1, 2'583 (97.22%) out of 2'657 respondents were working at the time they took the survey or had been working for the past 3 years. The survey results reported below focus on this subgroup.

Table 2.1: Respondents' Working Status

Working Status	Number	Percentage
Yes, I am working	2'460	92.59 %
No, but I have been working for the past 3 years	123	4.63 %
No, and I have not been working for the past 3 years	74	2.78 %

Notes: The table shows the number and percentage of respondents based on their answer to the question: "Do you work?".

Table 2.2 shows the distribution of gender in the survey sample. The share of female respondents among all respondents is 29.1%. Table 2.3 compares the share of female and male graduates in sample and the full alumni population. In the table, we calculate the share of female and male respondents in the survey sample among those who indicated either female or male as their gender. As we can see, the sample is fairly representative of the population of ETH alumni in terms of gender. Female graduates had a slightly higher likelihood to respond to the survey compared to male graduates.

Table 2.2: Distribution of Gender in the Survey Sample

Gender	Number	Percentage
Female	774	29.13 %
Male	1'854	69.78 %
I do not want to share	21	0.79 %
Miscellaneous	8	0.30 %

Notes: The table shows the number and percentage of respondents by self-reported gender.

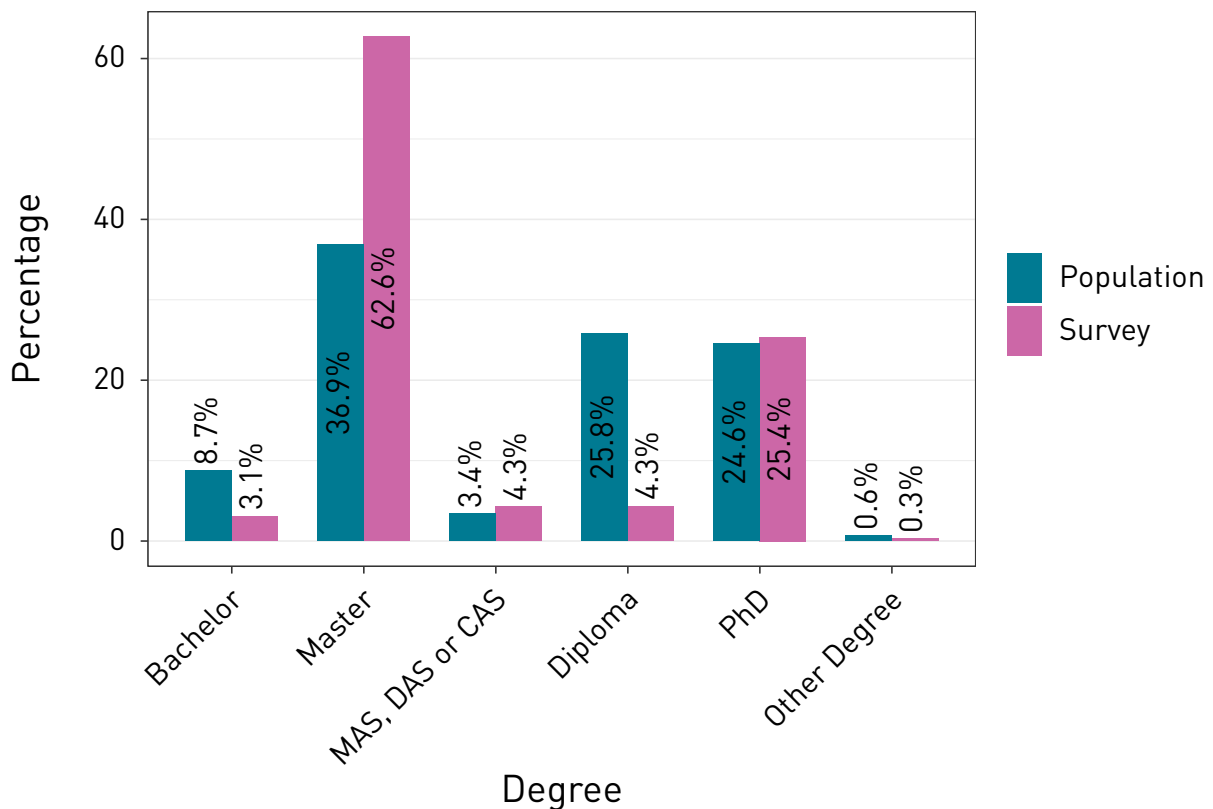
Table 2.3: Gender Distribution in Population and Sample

Gender	Population		Sample		Response Rate
	Number	Percent	Number	Percent	
Female	8'851	27.30%	774	29.45%	8.74%
Male	23'566	72.70%	1'854	70.55%	7.87%

Notes: The table shows the share of female and male graduates both for the population of ETH alumni and the survey sample. The share of female and male respondents in the survey sample has been calculated among the 2'628 respondents who indicated either female or male as their gender.

Figure 2.1 depicts the distribution of degrees among the full alumni population and among respondents of the survey. The major share of respondents in the survey have a master's degree. The share of respondents with a bachelor's degree is only 3.1%. Roughly a fourth of respondents holds a PhD. Moreover, compared to the total population of graduates addressed for this survey, the sample of respondents consists of a much larger share of graduates with a master's degree and a smaller share of graduates with a diploma degree. The result indicates that older alumni, which are more likely to have a diploma, had a lower likelihood to participate in the survey compared master's students that graduated more recently.

Figure 2.1: Distribution of Degree in the Population and the Survey Sample



Notes: The figure depicts the share of graduates by type of degree, separately for the population of ETH alumni and the sample of survey respondents. The category "Other Degree" includes degrees with state examination and didactic IDs (*didaktischer ausweis*).

Table 2.4 demonstrates the share of female and male respondents by age groups. As can be seen, all of the age groups below 64 years have at least a 10% share in the sample. Almost 14% are at least 55 years or older. Female respondents' are on average younger

than male respondents, reflecting the increase in female graduates over the past decades.

Table 2.4: Distribution of Age in the Survey Sample

Age Group	Female		Male		Total
	Number	Percent	Number	Percent	
Under 29 Years	189	7.19 %	313	11.91 %	19.10 %
30-34 Years	183	6.97 %	337	12.83 %	19.80 %
35-39 Years	168	6.40 %	334	12.71 %	19.11 %
40-44 Years	84	3.20 %	229	8.72 %	11.92 %
45-54 Years	104	3.96 %	320	12.18 %	16.14 %
55-64 Years	42	1.60 %	289	11.00 %	12.60 %
Above 64 Years	3	0.11 %	32	1.22 %	1.33 %

Notes: The table shows the number and percentage of male and female respondents by age groups. The shares are calculated with respect to the sample of total 2'627 female and male respondents who indicated their age in the survey (One of the respondents among the 2'628 female and male respondents did not indicate her age).

Table 2.5 shows the number and share of respondents who have graduated in different decades. Only a very small share of survey participants have graduated in the 1970s. More than 75% of the respondents have graduated in the 2000s or 2010s.

Table 2.5: Distribution of Graduation Decade in the Survey Sample

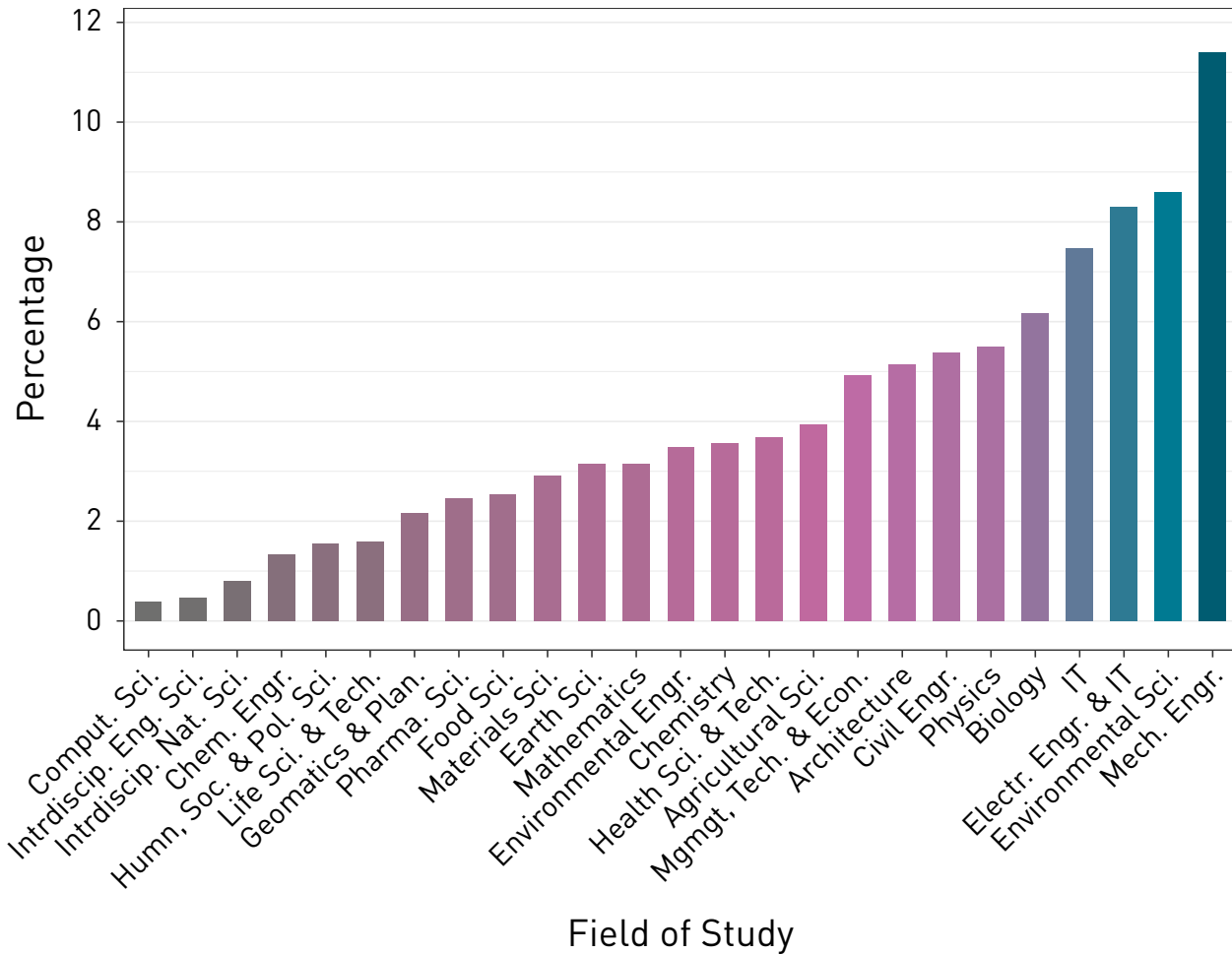
Graduation Decade	Number	Percentage
1970s	19	0.72 %
1980s	246	9.29 %
1990s	360	13.59 %
2000s	695	26.24 %
2010s	1'329	50.16 %

Notes: The table shows the number and percentage of respondents based on their decade of graduation. The sample used for this graph consists of 2'649 respondents because 8 respondents did not indicate their graduation year.

Figure 2.2 shows the distribution of respondents by field of study. Graduates in mechanical engineering represent the largest share among the survey participants and graduates

in computational sciences, interdisciplinary engineering sciences, and interdisciplinary natural sciences are the smallest (less than one percent of the sample each).

Figure 2.2: Distribution of Field of Study in the Survey Sample



Notes: The figure illustrates the share of respondents by fields of study in the sample of survey respondents. The abbreviations for fields of studies are as followed: "Agricultural Sci.": Agricultural Sciences, "Chem. Engr.": Chemical Engineering, "Civil Engr.": Civil Engineering, "Comput. Sci.": Computational Sciences, "Earth Sci.": Earth Sciences, "Electr. Engr. & IT": Electrical Engineering and Information Technology, "Environmental Engr.": Environmental Engineering, "Environmental Sci.": Environmental Sciences, "Food Sci.": Food Sciences, "Geomatics & Plan.": Geomatics and Planning, "Health Sci. & Tech.": , "Humn, Soc. & Pol. Sci.": Humanities, Social and Political Sciences, "Intrdiscip. Eng. Sci.": Interdisciplinary Engineering Sciences, "Intrdiscip. Nat. Sci.": Interdisciplinary Natural Sciences, "IT": Information Technology, "Life Sci. & Tech.": Life Sciences and Technology, "Mgmt, Tech. & Econ.": Management, Technology, and Economics, "Materials Sci.": Materials Sciences, "Mech. Engr.": Mechanical Engineering, "Pharma. Sci.": Pharmaceutical Sciences.

2.2 Work-Related Characteristics

Note: 2'583 of the respondents indicated that they were working at the time they took the survey or had been working within the past 3 years. The work-related questions were only asked to these participants. In the following, the statistics that are reported thus refer to these 2'583 respondents. The answers always refer to the current or last job.

Table 2.6 shows the work location of the respondents. The survey was conducted in German and targeted to the three German-speaking countries Austria, Germany, and Switzerland. Correspondingly, the majority of respondents work in Switzerland. The results from this survey are thus best interpreted as mirroring the working conditions of ETH graduates that work in German-speaking countries.

Table 2.6: Work Location of Respondents

Country	Number	Percentage
Switzerland	2284	88.42 %
Germany	165	6.39 %
Austria	18	0.70 %
Other	116	4.49 %

Notes: The table shows the number and percentage of respondents working by country of work. The majority of respondents work in Switzerland.

Table 2.7 shows the distribution of full-time equivalents among the respondents separately for female and male respondents. For individuals who were not working at the time the survey took place, the numbers reflect the full-time equivalents of their last job. About 37% of female respondents work less than 80%. The figure is 14% for male respondents. We return to these differences in the next chapter.

Table 2.7: Distribution of Full-time Equivalents by Gender

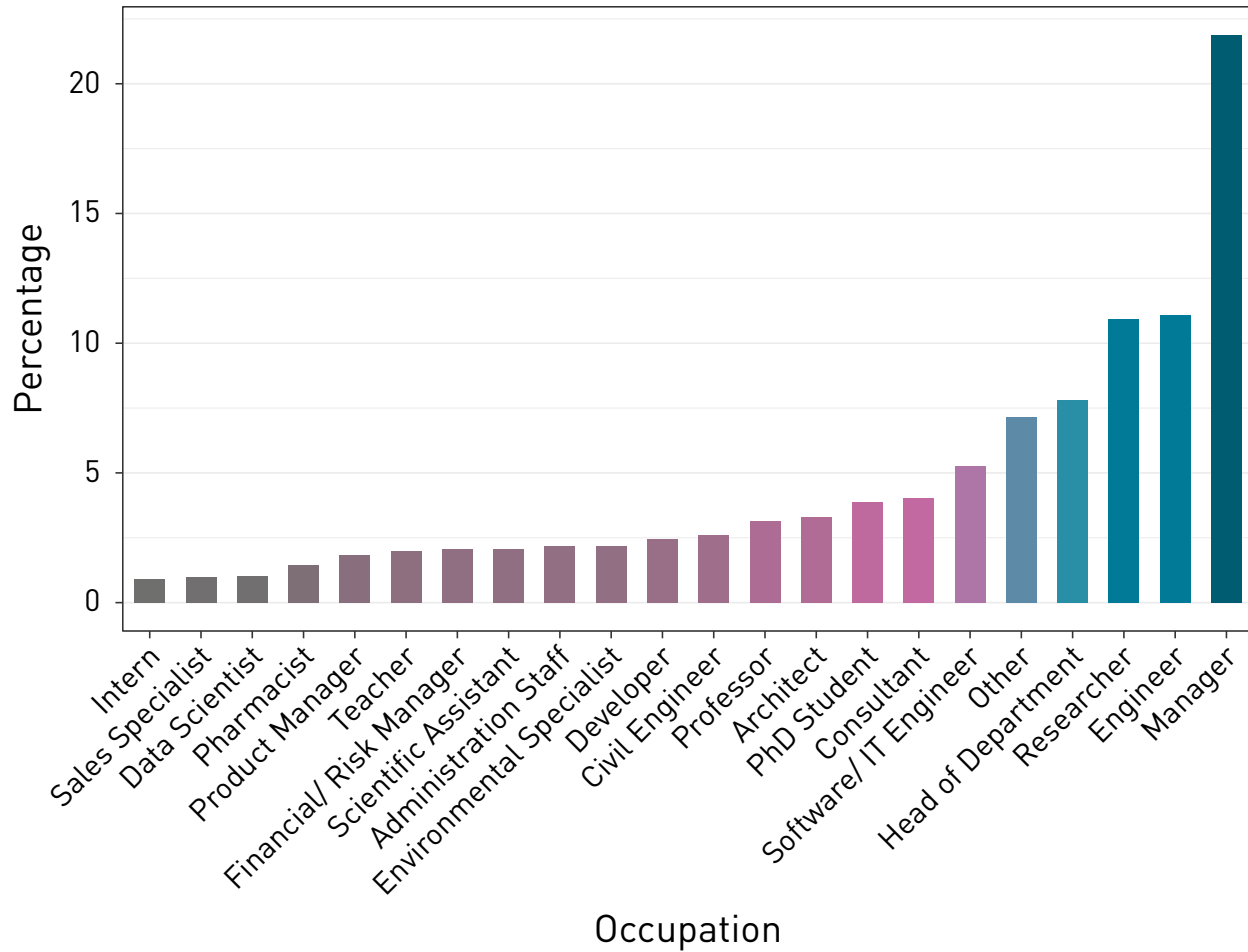
Gender	Full-time Equivalent	Number	Percentage
Female	Part time: 1-20 %	3	0.40 %
Female	Part time: 21-40 %	23	3.07 %
Female	Part time: 41-60 %	94	12.57 %
Female	Part time: 61-80 %	157	20.99 %
Female	Part time: 81-90 %	80	10.70 %
Female	Full time: 91-100 %	391	52.27 %
Male	Part time: 1-20 %	5	0.28 %
Male	Part time: 21-40 %	14	0.77 %
Male	Part time: 41-60 %	41	2.27 %
Male	Part time: 61-80 %	193	10.67 %
Male	Part time: 81-90 %	152	8.41 %
Male	Full time: 91-100 %	1403	77.60 %

Notes: The table shows the number and percentage of respondents by workload (expressed in full-time equivalents) and gender. About 37% of women and 14% of men work less than 80%.

Figure 2.3 shows the occupations of the survey participants. Occupation titles were entered by respondents in an unstructured text field. The categories shown in figure 2.3 were determined based on the occupation titles respondents had specified. We observe that managers, engineers¹, and researchers represent the largest share among the respondents. 21.9% of the survey participants are managers. Another 7.8% report to be heads of department. 3.9% are PhD students and 3.14% are professors. Overall, ETH graduates predominantly work in technical occupations, research and development, and managerial occupations.

¹There are three categories of engineers: engineer, civil engineer, and software/ IT engineer. The category “engineer” refers to any engineering occupation other than civil or software/ IT engineering. We separate these groups because civil engineers and software/ IT engineers made up a large share of respondents.

Figure 2.3: Distribution of Occupations

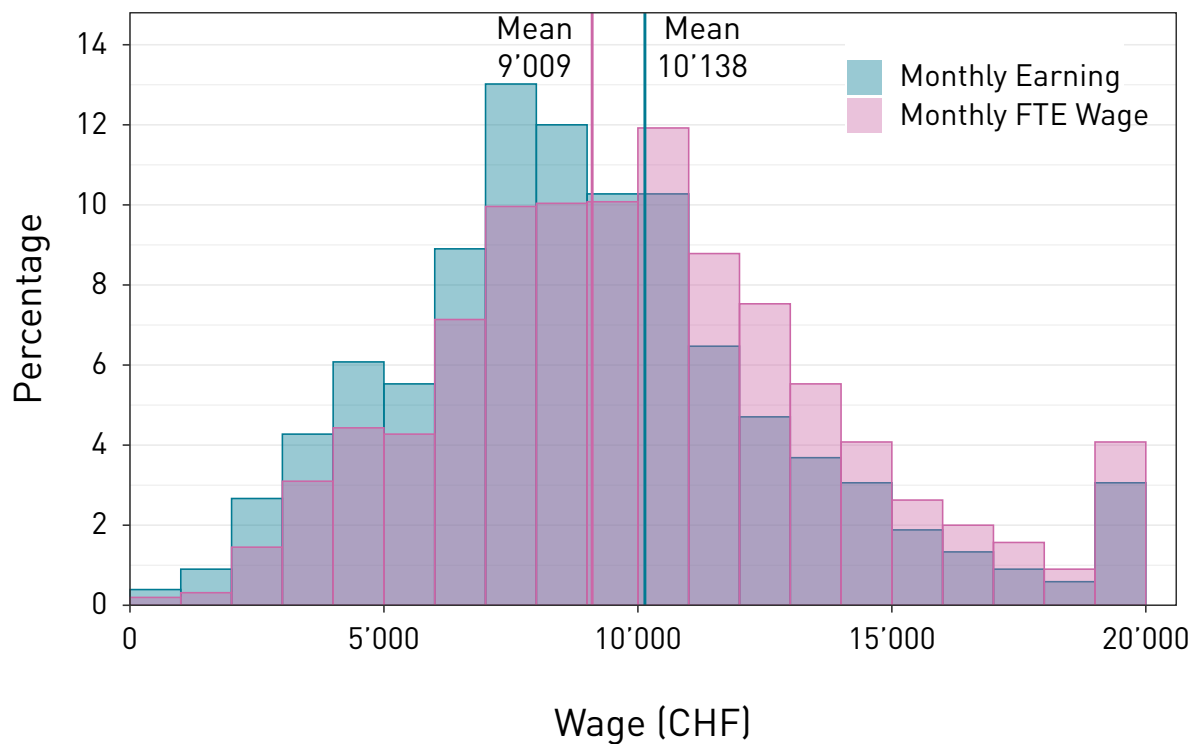


Notes: The figure shows the fraction of survey participants among all participants by occupation. Managers with a share of 21.9% are by far the largest group. Overall, we can see that ETH graduates predominantly work in technical occupations, in research and development, or managerial occupations.

2.3 Wage

We asked respondents to indicate their monthly salaries in the current or last job (where the maximum option was 20'000 CHF per month). These salaries were first transformed into annual earnings according to the number of monthly salaries each respondent declared to receive annually (12, 13, or 14 months) and then divided by 12 to obtain the respondents' monthly earnings. Afterward, the monthly earnings were adjusted according to respondents' full-time equivalents (FTE). For instance, if a respondent's workload is 20% and he or she receives 12 months of salary annually, her FTE wage will be 5 times her usual monthly wage. As a final step, any such calculated monthly wage (per full-time equivalent) above 20'000 CHF is set to 20'000 CHF. Figure 2.4 shows the distribution of respondents' monthly earnings and FTE wages and their mean values. Respondents' average monthly earnings are 9'099 CHF and their average monthly FTE wage is 10'138 CHF. More than 11% of the respondents have a monthly FTE wage of more than 15'000 CHF.

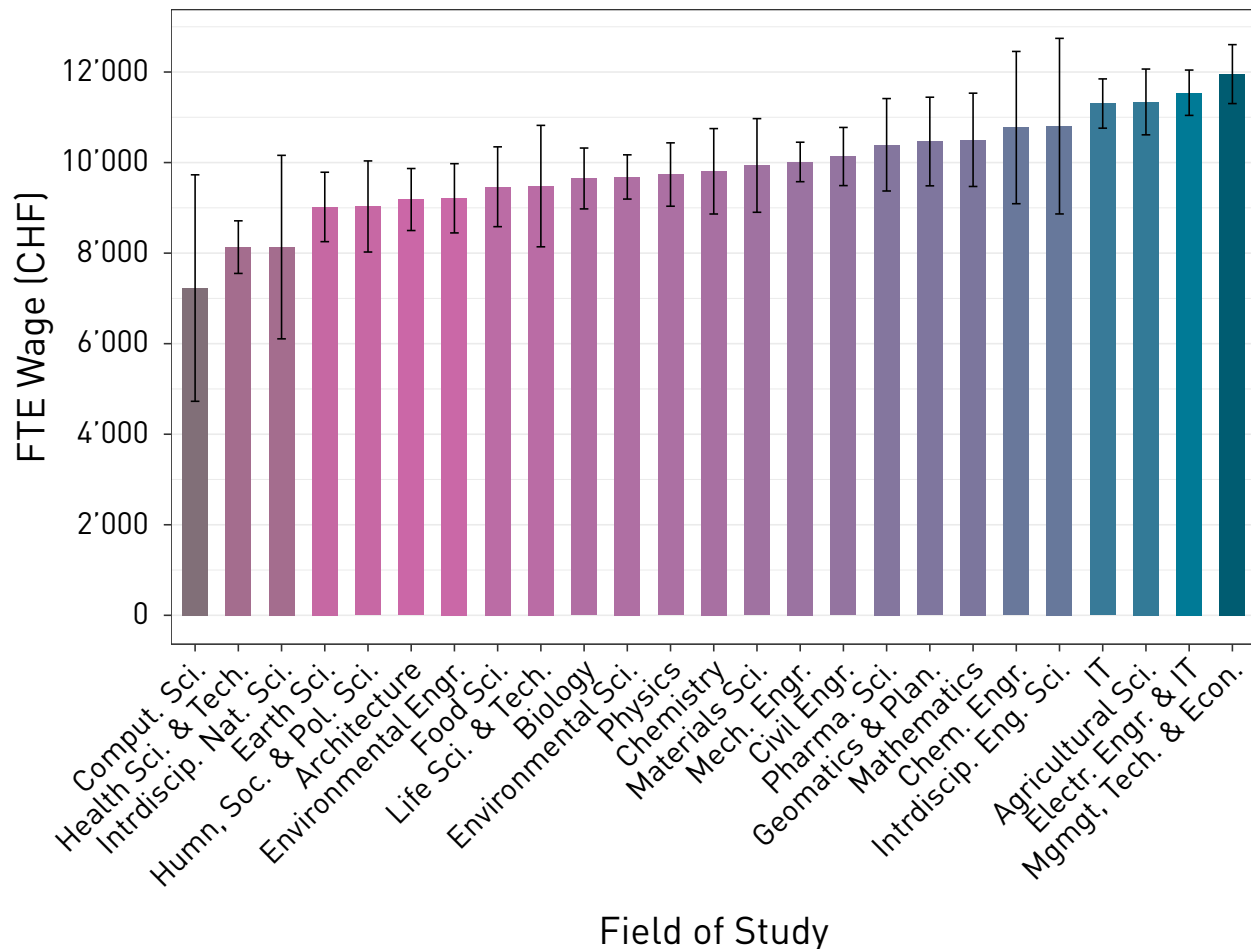
Figure 2.4: Distribution of the Monthly Earnings and FTE Wages



Notes: The figure depicts the distribution of the monthly earnings and full-time equivalent wages in the sample and their mean, which are 9'099 CHF and 10'138 CHF per month, respectively. The sample in this graph consists of 2'550 respondents. This is smaller than the total sample of 2'583 working respondents because 33 of the respondents had reported very low or very high wages which were possibly on a different scale. These outliers were simply eliminated from the sample.

Figure 2.5 shows averages of monthly FTE wages and their corresponding 95% confidence intervals for graduates of different fields of study. Graduates in management, technology and economics; electrical engineering and information technology; agricultural sciences; and information technology have the highest mean wages, making on average more than 11'000 CHF per month. On the other end of the spectrum, graduates in computational sciences; health sciences and technology; interdisciplinary natural sciences; and humanities, social and political sciences have the lowest mean wages. However, average wages (per FTE) of graduates in computational sciences and interdisciplinary natural sciences have a wide confidence interval. This mainly reflects the small number of survey participants in these two fields.

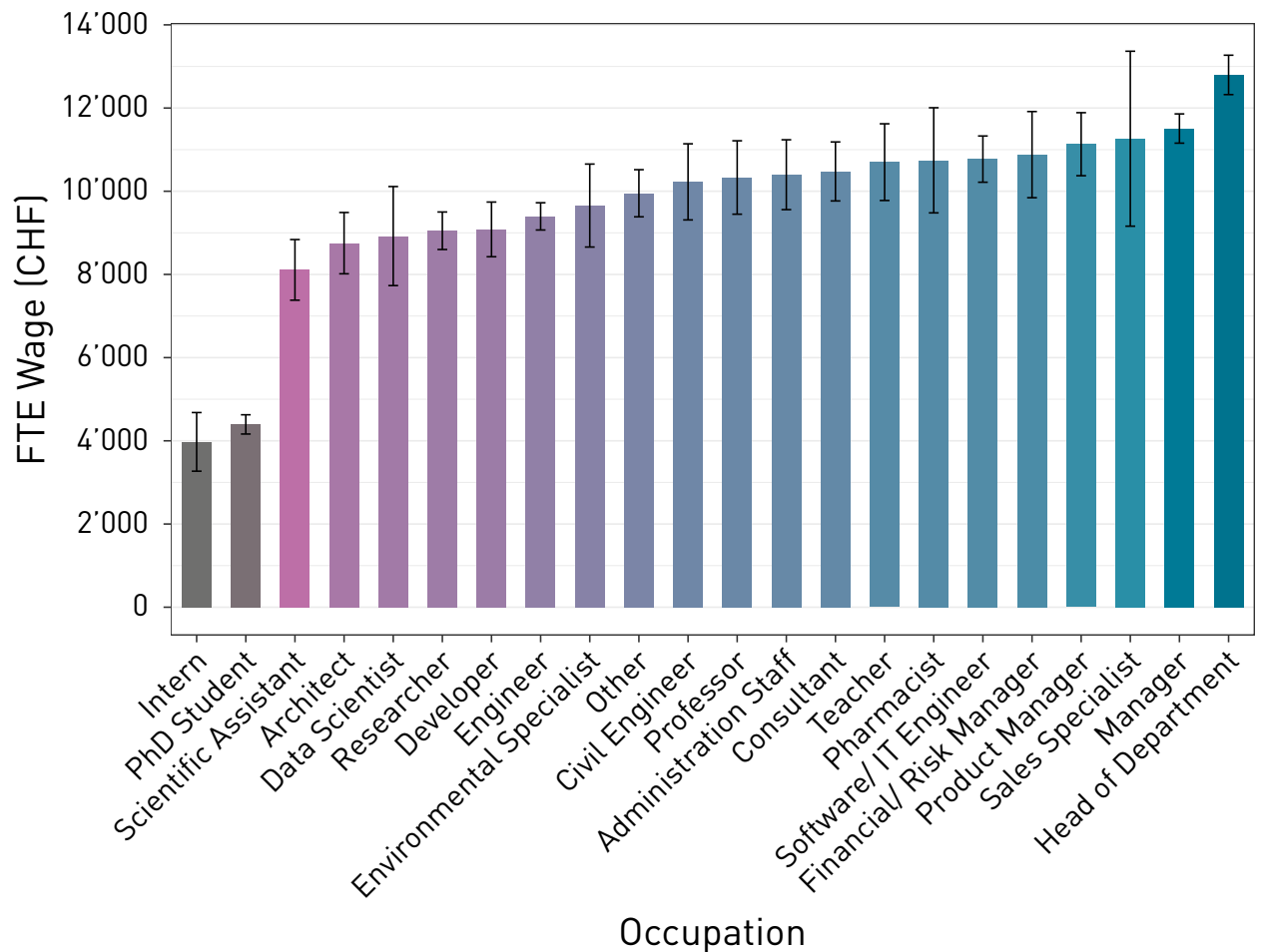
Figure 2.5: Mean FTE Wages by Field of Study



Notes: The figure shows mean monthly full-time equivalent wages of respondents by field of study. Vertical bars reflect the 95% confidence intervals of the mean values. The sample used for this plot consists of 2'550 respondents.

Figure 2.6 illustrates mean monthly FTE wages of respondents and the corresponding 95% confidence intervals by occupation. Except for interns and PhD students, all occupations have an average wage of at least 8'000 CHF per month. Heads of departments and managers have the highest mean wages, making on average more than 11'000 CHF per month. Interns and PhD students, on the other hand, are the occupations with the lowest mean FTE wages with an average monthly wage of about 4'000 CHF per month. Average wages of data scientists are also noticeable. Data scientists are said to be one of the most demanding occupations these days. Data scientists in this survey, however, are among the occupations with relatively low wages. One explanation is that most of the data scientists in the survey sample are young and thus have relatively little work experience.

Figure 2.6: Mean FTE Wages by Occupation



Notes: The figure shows mean monthly full-time equivalent wages of respondents by occupation. Vertical bars reflect the 95% confidence intervals of the mean values. The sample used for this plot consists of 2'550 respondents.

There are two additional remarks regarding respondents' wages. First, wages are strongly increasing with respondents' work experience. Second, concerning respondents' degrees, the average monthly FTE wage for graduates with a bachelor's degree in the survey is about 7'700 CHF per month. The figure is about 9'900 CHF for graduates with a master's degree, 10'200 CHF for MAS, DAS, or CAS degree holders, and 11'900 CHF for a diploma and 11'100 CHF for PhD degree holders, respectively. Note that a large share of respondents with a bachelor's degree are interns or have less than 6 years of experience. The graduates with an ETH diploma are older than average and most have more than 10 years of experience. For more details, see appendix B.

2.4 Job Satisfaction

In the survey, respondents were also asked to rate their overall job satisfaction on a scale from 1 to 5. Figure 2.7 shows the distribution of the overall job satisfaction score.

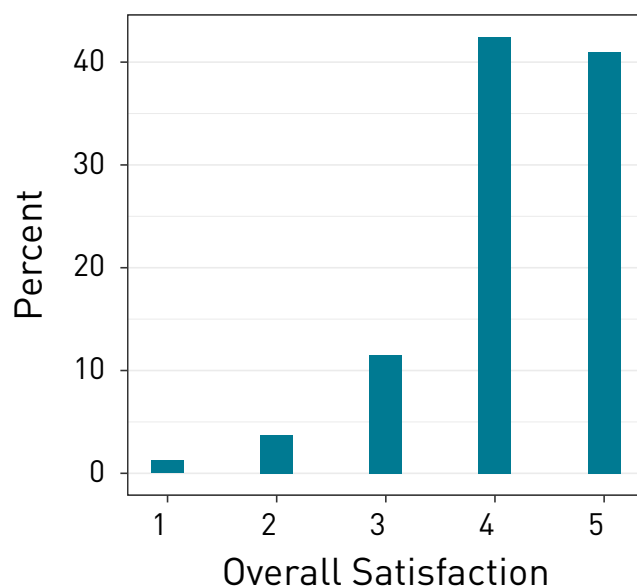


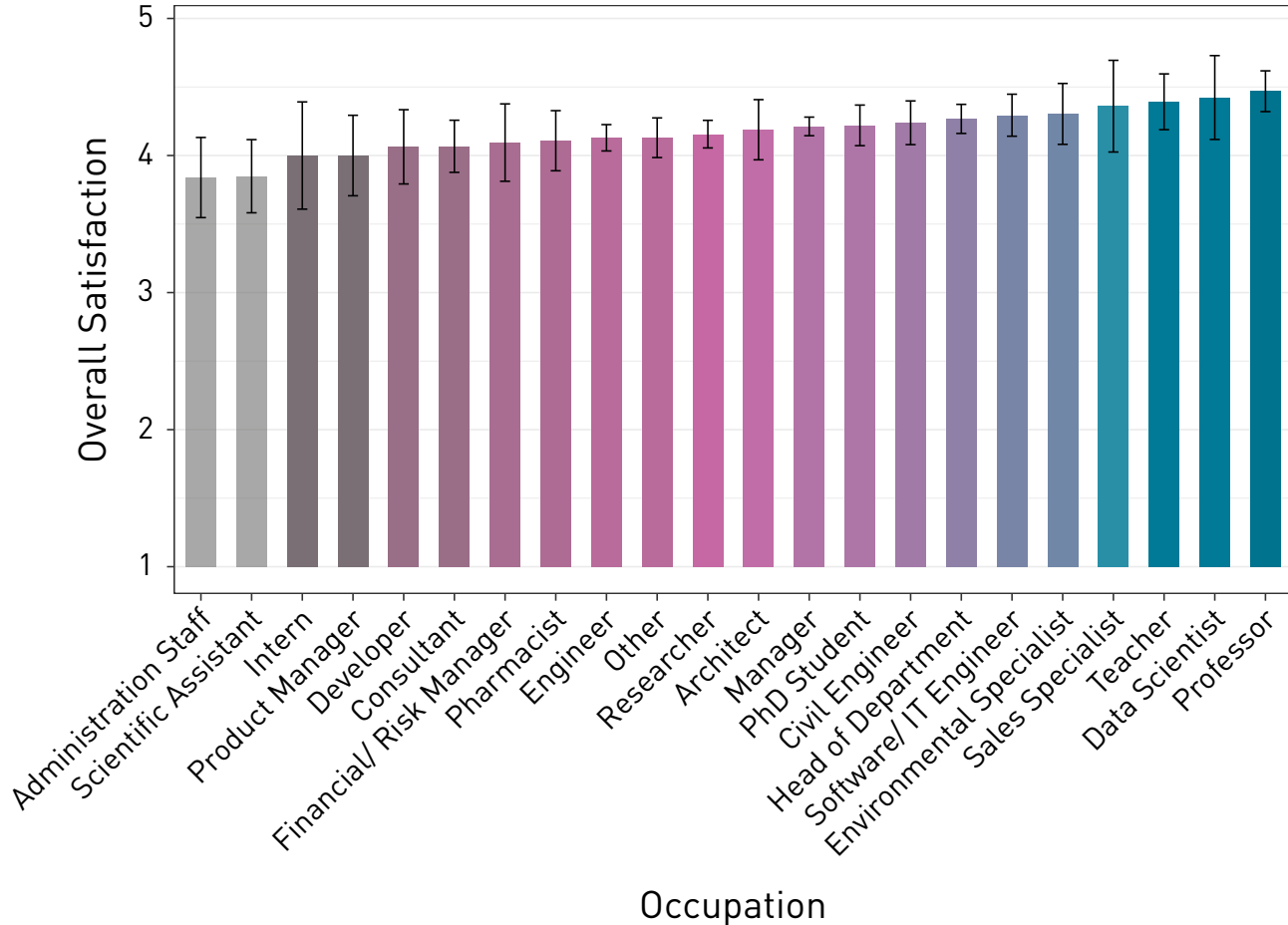
Figure 2.7: Distribution of Overall Job Satisfaction

Most survey participants are (were) satisfied with their current (last) job. More than 80% of the respondents rated their overall job satisfaction with a 4 or 5 and only about 5% of the respondents gave a score of 1 or 2.

Figure 2.8 depicts the average of the overall job satisfaction score by occupation. Vertical bars reflect the 95% confidence intervals of the mean values. Professors, data scientists, and teachers in the sample are the ones most satisfied with their jobs with an

average overall satisfaction score around 4.4. Administration staff, scientific assistants, and interns, on the other hand, are the occupations with the lowest job satisfaction with an average score below 4. Nevertheless, the average job satisfaction score exceeds 3.8 in these occupations, too. Also note that there are occupations such as data scientists and professors who do not have as high average FTE wages as managers. However, we can observe that they are on average the most satisfied with their jobs.

Figure 2.8: Mean Overall Satisfaction Score by Occupation



Notes: The figure shows mean overall job satisfaction by occupation. Job satisfaction was levied on a scale from 1 to 5. Vertical bars reflect the 95% confidence intervals of the mean values.

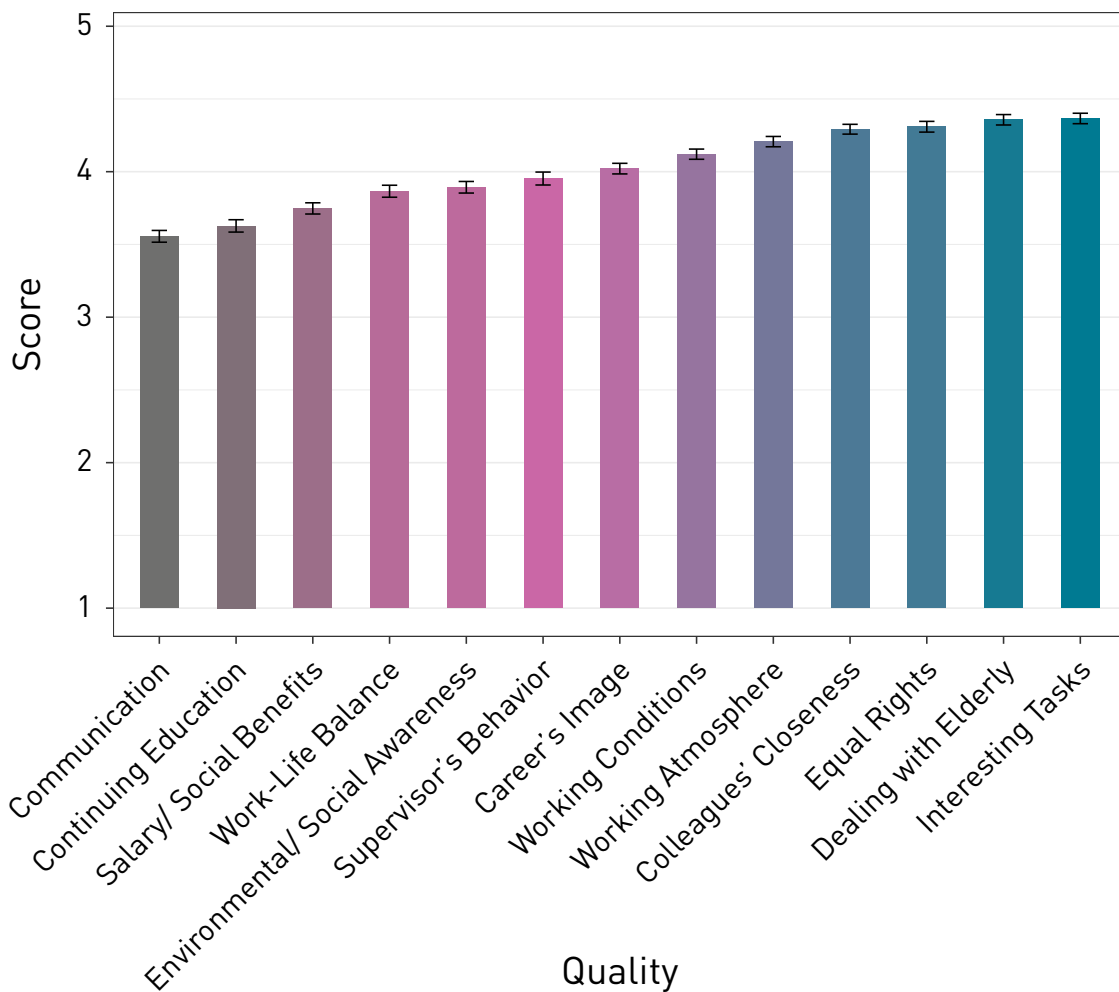
Respondents were also asked if they would recommend their employer to a friend. 87.7% of the respondents indicated that they would do so. Product managers and administration staff have lower probabilities to recommend their employers to friends; about 75% of them recommended their employer. More than 94% of the sales specialists and environmental specialists in the sample recommend their employers.

2.5 Working Conditions

In the survey, respondents were asked to rate different aspects of their jobs and their working conditions. The scale ranged from 1 to 5. Figure 2.9 shows the mean score of these qualities and the corresponding 95% confidence intervals. Respondents are most satisfied with the interesting tasks they have, how their employers deal with the elderly,

equal rights, and the closeness to their colleagues; all four qualities have a mean score of almost 4.3. On the other hand, they seem to be relatively less satisfied with the communication in their workplace, with the conditions for continued education, and, strikingly and despite the high observed FTE wages, with salary and social benefits. Nevertheless, most of the job aspects have a mean score of around 4 or above 4, which suggests that respondents are on average quite satisfied with their working conditions.

Figure 2.9: Working Conditions Mean Scores

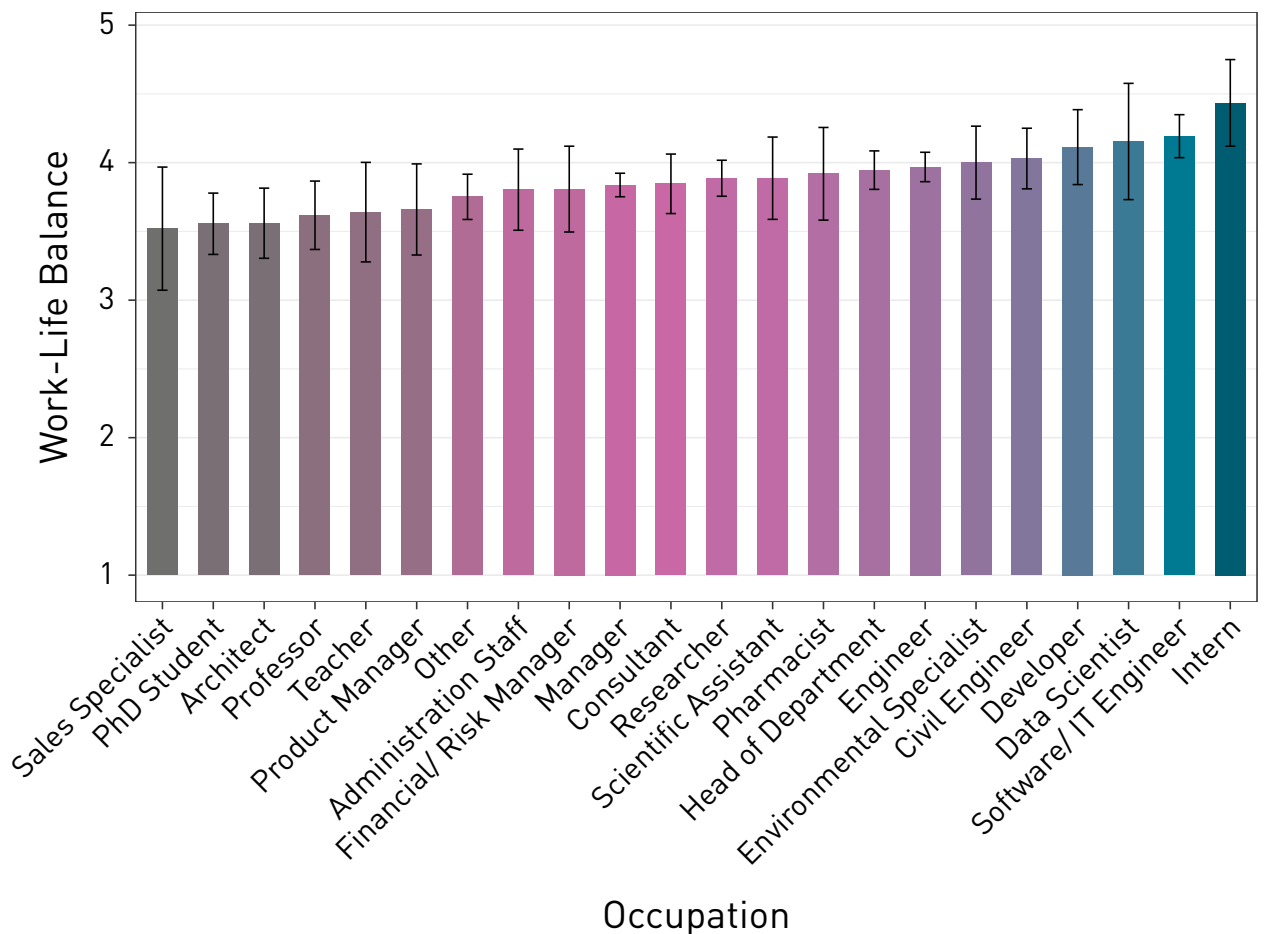


Notes: The figure demonstrates mean scores for different aspects of respondents' jobs. Each aspect was levied on a scale from 1 to 5. Vertical bars reflect the 95% confidence intervals.

2.5.1 Work-Life Balance

Figure 2.9 illustrates that work-life balance is one of the job aspects that the respondents were relatively less satisfied with. Figure 2.10 shows mean work-life balance scores by occupation. Interns are relatively satisfied with the work-life balance with a mean score of 4.4. Software/ IT engineers, data scientists, and developers are the next top occupations with regards to the work-life balance. On the other end, sales specialists, PhD students, architects, and professors are the least satisfied with their work-life balance, with mean scores around 3.5.

Figure 2.10: Mean Work-Life Balance Score by Occupation

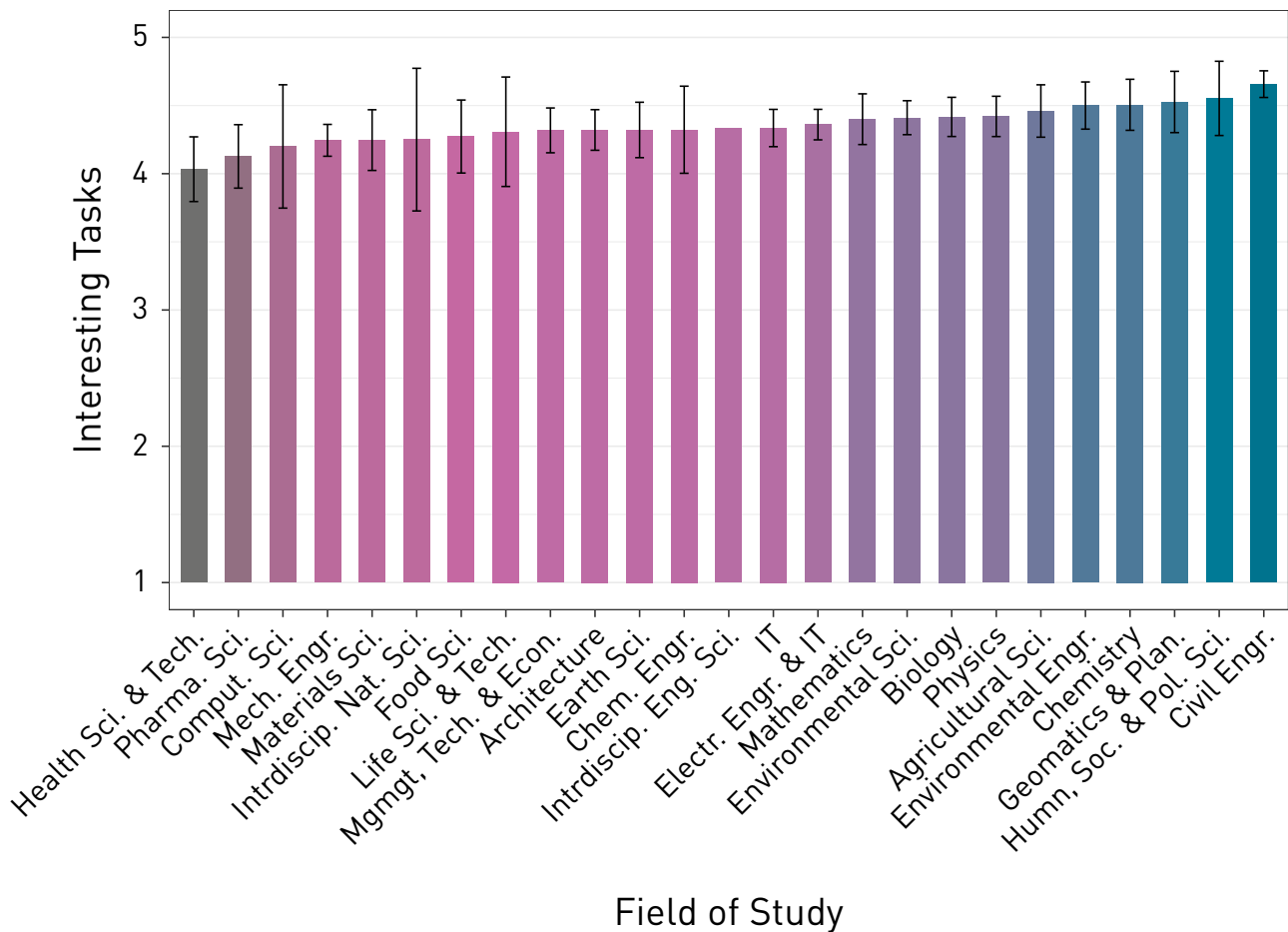


Notes: The figure illustrates the mean work-life balance score by occupation. Vertical bars reflect the 95% confidence interval of the mean values.

2.5.2 Interesting Tasks

Figure 2.9 shows that respondents think that their job offers interesting tasks. Figure 2.11 illustrates averages of this score by field of study. Graduates of civil engineering; humanities, social, and political sciences; geomatics and planning, chemistry, and environmental engineering have the highest scores with averages around 4.5. Graduates of health sciences and technology and pharmaceutical sciences, on the other hand, have the least scores with averages just above 4. However, a key take-away of the graph is that the averages are always above 4, indicating that ETH graduates of all fields of studies think that their job involves interesting tasks.

Figure 2.11: Mean Interesting Tasks Score by Field of Study

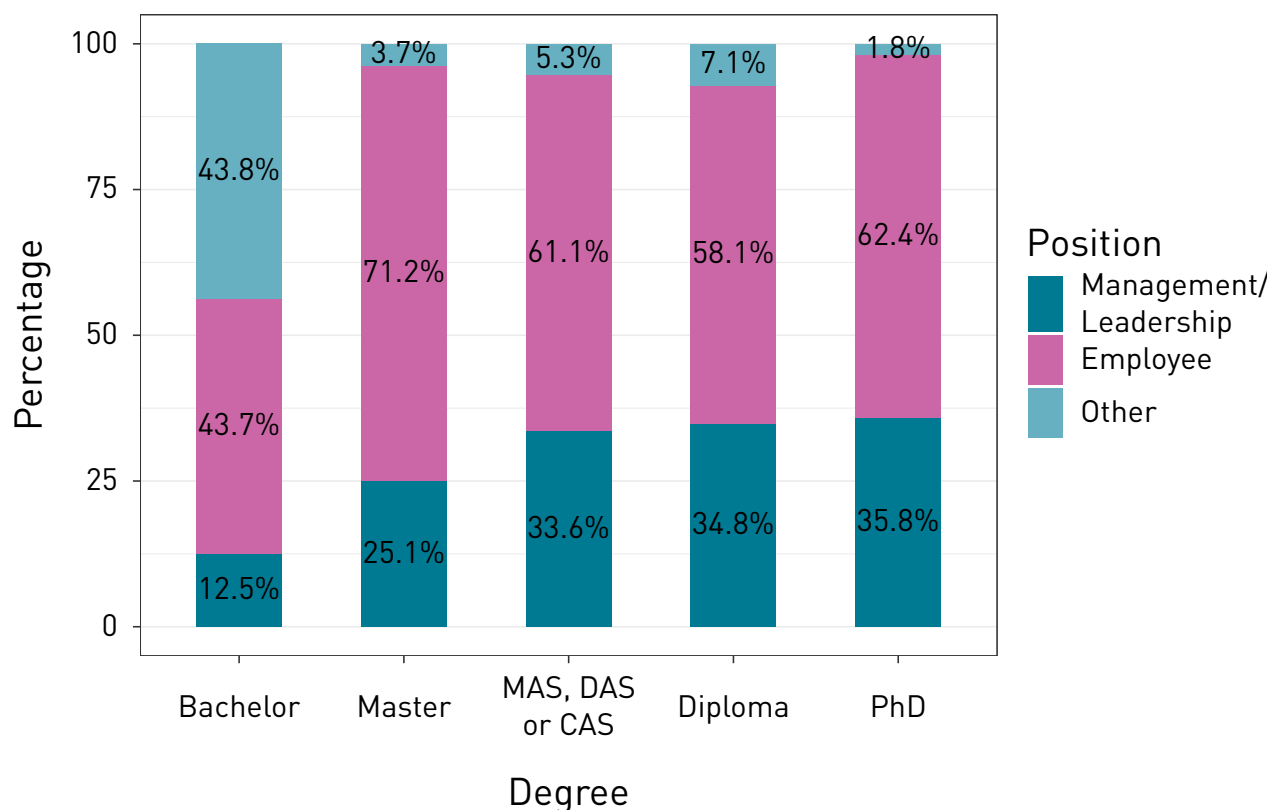


Notes: The figure shows the mean interesting tasks score by field of study. Vertical bars reflect the 95% confidence interval of the mean values.

2.6 Leadership

The survey levied information on graduates' leadership responsibilities along two related measures. The first is reported in Figure 2.12 illustrating the distribution of the respondents' positions within the firm by type of degree. Strikingly, around 35% of the respondents with an MAS, DAS, or CAS degree, a diploma, or a PhD degree indicate that they have a management or leadership position in their firm.

Figure 2.12: Distribution of Position by Type of Degree

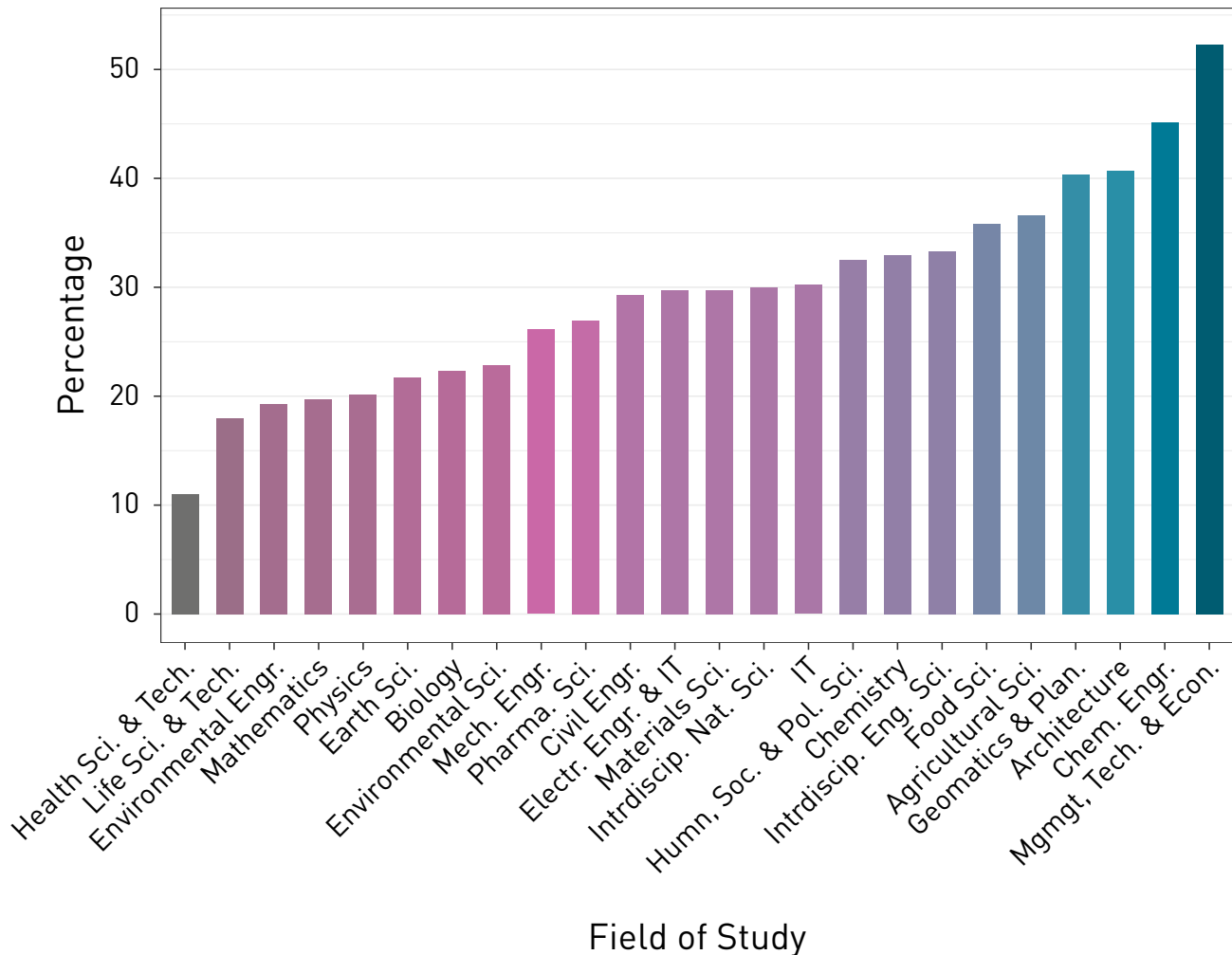


Notes: The figure demonstrates the share of respondents with different positions by type of degree. "Other" includes internship, freelance, temporary positions, and working students.

Figure 2.13 shows the share of respondents that have management or leadership positions in their firms by field of study. More than 50% of the respondents with a degree in management, technology, and economics are in management or leadership positions.

Respondents were also asked whether they had personnel responsibilities. 45.6% of the respondents answered yes to this question. This share was 51.3% for respondents with

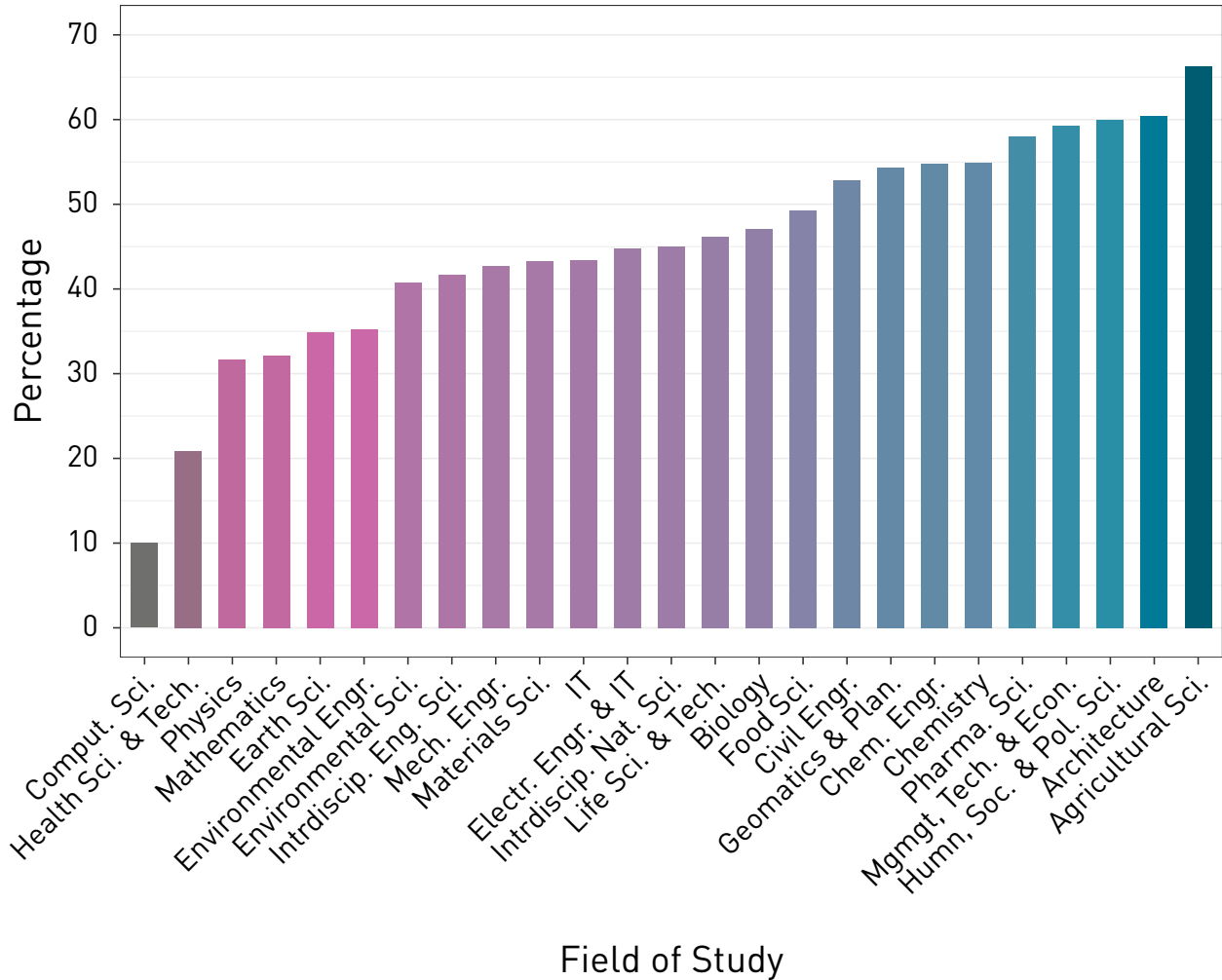
Figure 2.13: Share of Respondents in Management/Leadership Positions by Field of Study



Notes: The figure shows the share of respondents in management/leadership positions by field of study.

an MAS, DAS, or CAS degree, 52.3% for diploma holders, and 57.5% for those with a PhD degree, respectively. Figure 2.14 depicts the share of respondents with personnel responsibility by field of study. The share of graduates with personnel responsibilities is largest among graduates of agricultural sciences, followed by graduates of architecture; humanities, social, and political sciences; and management, technology and economics. In these fields, almost 60% of the ETH graduates report to have personnel responsibilities.

Figure 2.14: Share of Respondents with Personnel Responsibility by Field of Study



Notes: The figure shows the share of respondents with personnel responsibility by field of study. More than 65% of the respondents with a degree in agricultural sciences and almost 60% of graduates in architecture, humanities, social and political sciences; and management, technology and economics have personnel responsibilities in their jobs.

Chapter 3

Gender Gap

Equality between women and men has been enshrined in the Swiss constitution since 1981. Indeed, gender gaps along several important labor market dimensions have narrowed in Switzerland in the past decades. But important differences remain. This year, Switzerland was ranked only 18th among 153 countries in the 2020 WEF global gender gap report.¹ The labor force participation rate of women and men (share of working female/-male population between 15 and 64 years) is 80.1% and 88.2% respectively, indicating an 8 percentage points difference.² There is a significant gap regarding full- versus part-time work. As of 2019, nearly 25% of female workers in Switzerland were working less than 50%, in comparison to only 7% among male workers.³ While 82% of men in employment worked full-time, only 40% of women worked full-time.³ Concerning the wage gap, women still earned 14.8% less than men as of 2016.⁴ In the WEF 2020 gender gap report, Switzerland has been ranked 40th with regards to the wage equality for similar work. Finally, as of 2018, only about 36% of managerial positions were held by women.⁵

The analyses of the survey among ETH alumni also revealed important differences between men and women in the work environment. Indeed, the data on ETH graduates reflect well-known gender gaps in Switzerland's labor market. In this chapter, we will first look whether female and male survey respondents differ in their characteristics. In the next sections, we discuss the wage gap and differences in working conditions between

¹World Economic Forum Global Gender Gap Report 2020

²The World Bank Data Bank, Gender Indicators Report (Accessed on 25/05/2020)

³Federal Statistical Office, Gender Equality Statistics 2019 (Accessed on 25/05/2020)

⁴OECD Gender Wage Gap Data (Accessed on 25/05/2020)

⁵International Labor Organization (ILO), Sustainable Development Goals (SDG) Indicators (Accessed on 25/05/2020)

men and women.

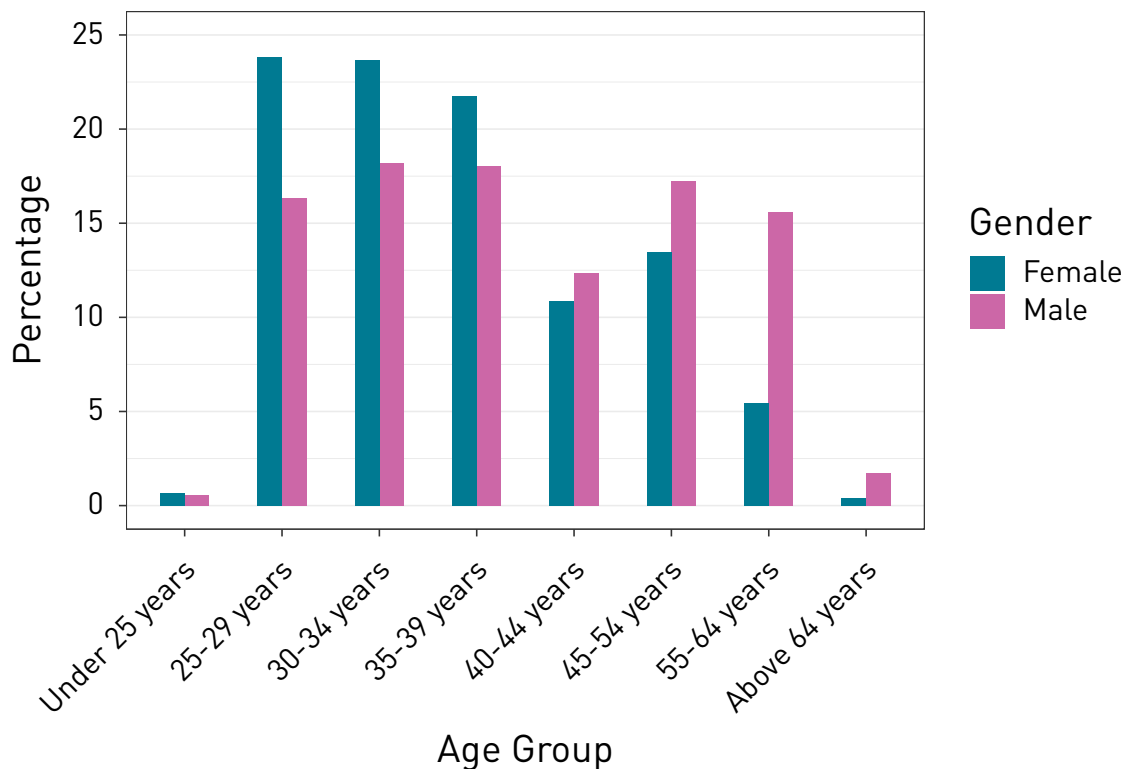
3.1 Differences in Sample Characteristics

As mentioned in section 2.1, 774 female graduates (29.5%) and 1'854 male respondents (70.5%) responded to this survey. This section explores gender differences in average work experience, university degrees and field of study, and part-time work between the participants.

3.1.1 Age and Work Experience

The female respondents in the survey are on average younger than their male counterparts. This fact can be observed in figure 3.1. Female respondents are over-represented in younger age groups.

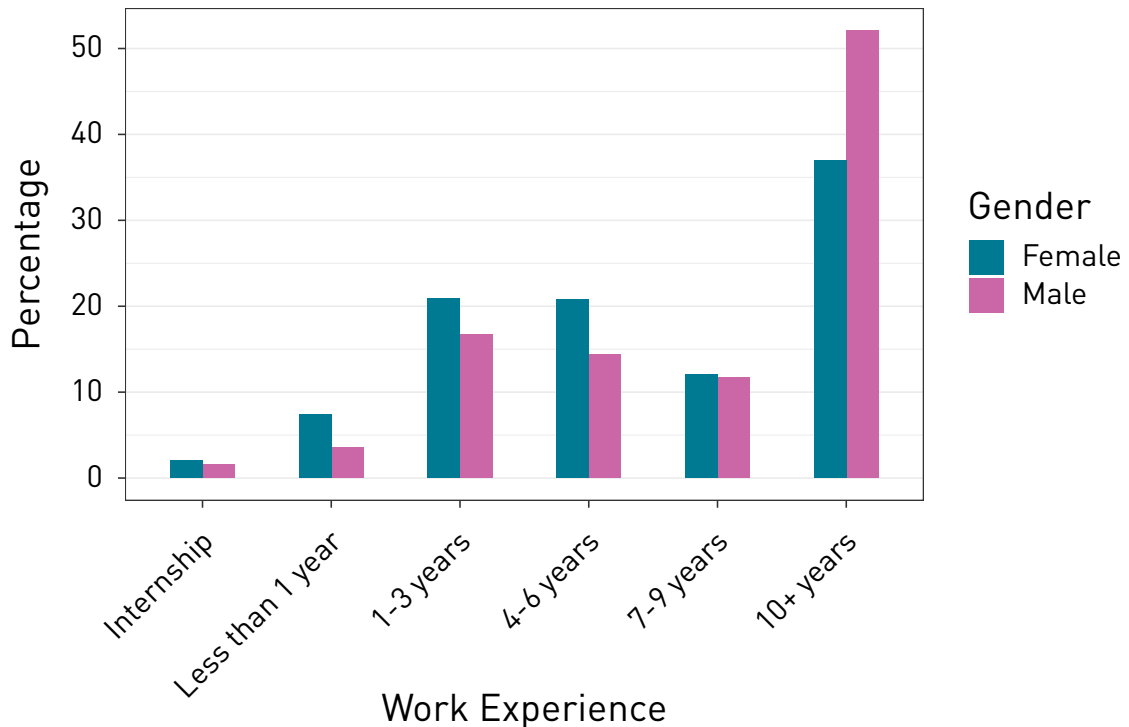
Figure 3.1: Distribution of Age by Gender



Notes: The figure depicts the share of female and male respondents in different age groups. Female respondents are on average younger.

Female respondents also have on average less work experience than male respondents in the survey in Figure 3.2. About 52% of male respondents have more than 10 years of experience, while the figure for female respondents is about 37%.

Figure 3.2: Distribution of Work Experience by Gender



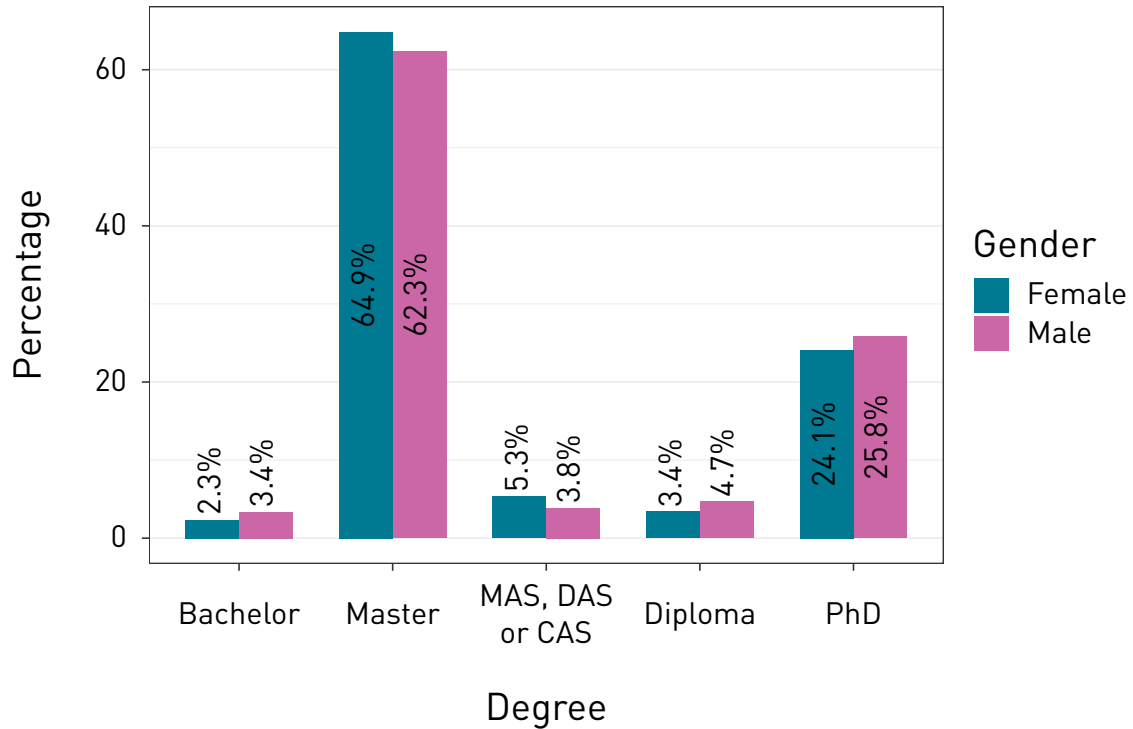
Notes: The figure shows the share of female and male respondents by levels of work experience. The sample used for this plot consists of 747 female and 1'807 male respondents. Female respondents have less work experience on average.

3.1.2 Degree

Figure 3.3 shows the distribution of types of degree among male and female ETH alumni. The distributions are indeed very similar for men and women. The Chi-squared test of independence for the two distributions results in a p-value of 0.9. Hence, we cannot reject the null hypothesis that the two distributions are identical. The majority of both female and male respondents have a master's or a PhD degree.

Regarding the field of study, the share of female graduates is largest in environmental sciences, biology, and health sciences and technology, with female shares of 14.8%, 9.6% and 9.3%, respectively. Many men, on the other hand, are graduates of engineering fields,

Figure 3.3: Distribution of Degree by Gender



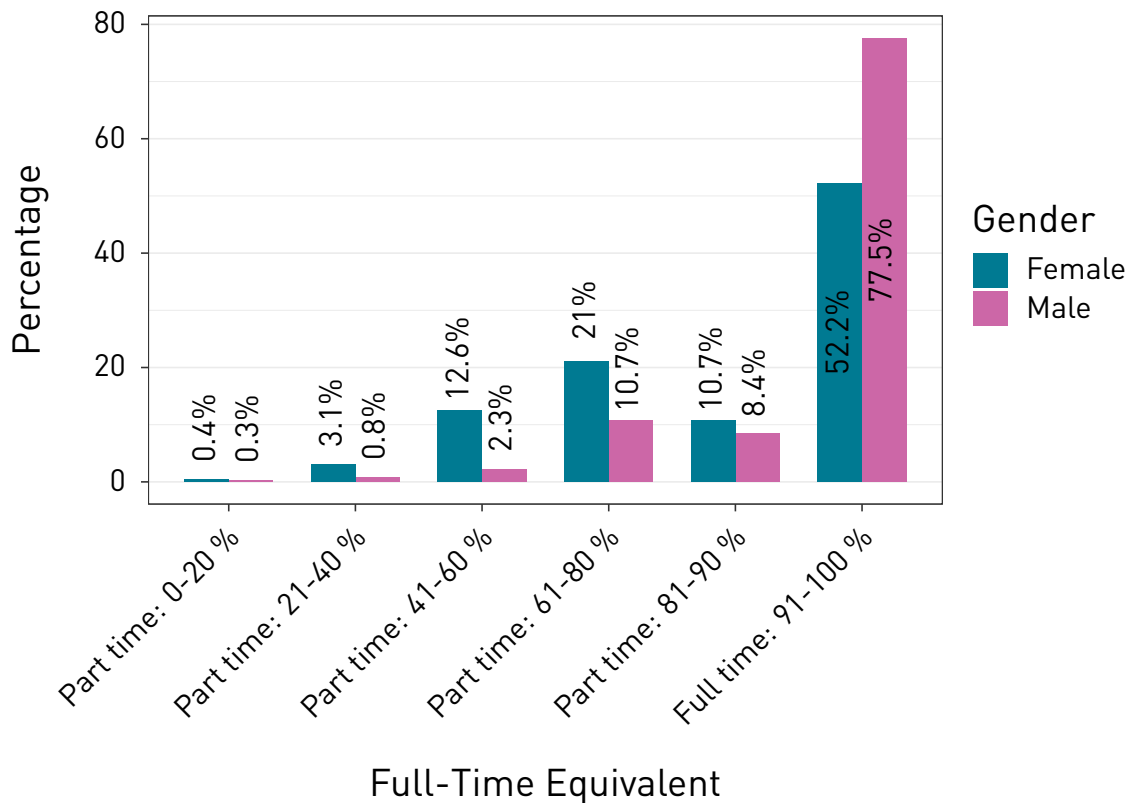
Notes: The figure depicts the share of female and male respondents by type of degree. The distributions are similar for female and male respondents.

with a share of 41.5% graduates in fields of mechanical engineering, electrical engineering and information technology, information technology, and civil engineering. The share of female respondents in these fields is only 11.4%.

3.1.3 Full-Time vs. Part-time Work

The female and male respondents differ significantly in the prevalence of part-time work. Figure 3.4 shows the distribution of full-time equivalents for female and male respondents. Only 14.1% of men work less than 80%, while the figure is 37.1% for female respondents. Not surprisingly, a Chi-squared test of independence of the two distributions results in a p-value less than 0.01, which shows that we reject the hypothesis that the two distributions are equal at a 1% significance level.

Figure 3.4: Distribution of Full-Time Equivalents by Gender



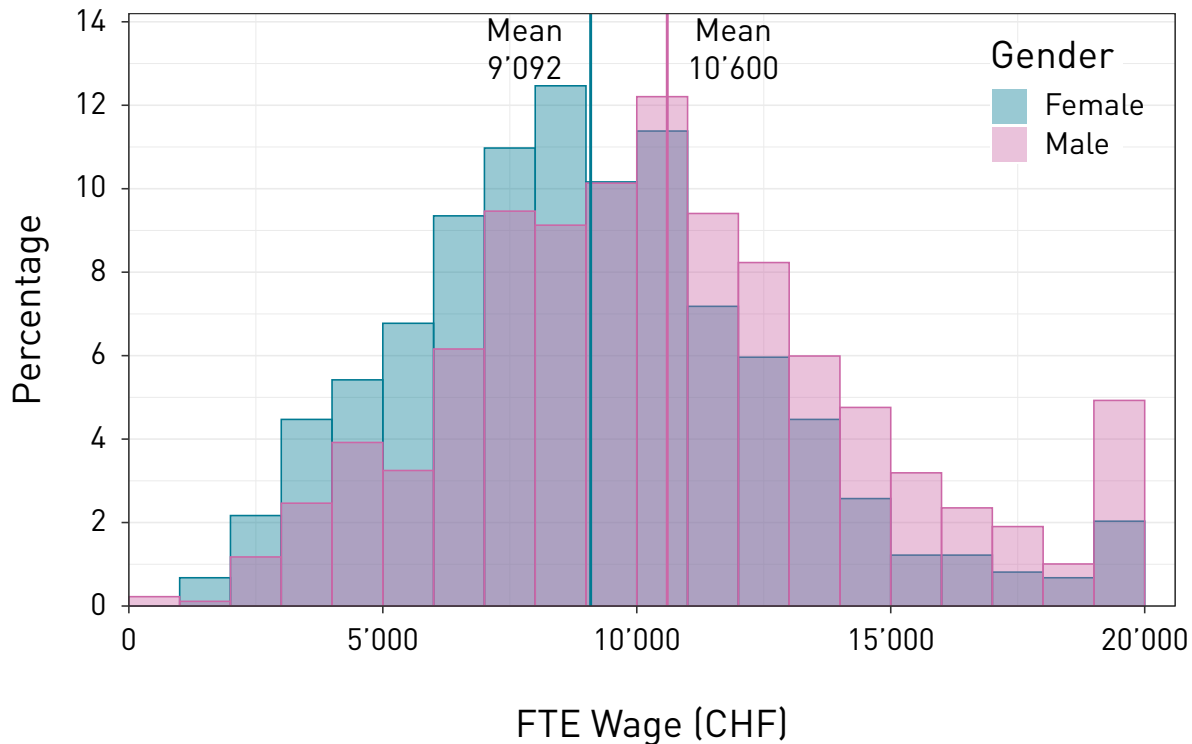
Notes: The figure depicts full-time equivalents by gender. The sample used for this plot consists of 747 employed female and 1'807 employed male respondents. While 37.1% of female respondents work less than 80%, the figure is 14.1% for the male respondents.

3.2 Wage Gap

Figure 3.5 depicts the distribution of monthly full-time equivalent (FTE) wages for female and male survey participants. Men in the survey earn on average 10'600 CHF. The corre-

sponding figure for women is 9'092 CHF per month, which means that female respondents earn about 14.2% less than male respondents. However, this difference does not necessarily reflect discrimination. As mentioned earlier, female respondents in the survey are younger and have less work experience. Therefore, this gap can be partly (but not completely) attributed to observed differences in the characteristics of female and male ETH graduates, as discussed below.

Figure 3.5: Distribution of Monthly FTE Wages by Gender

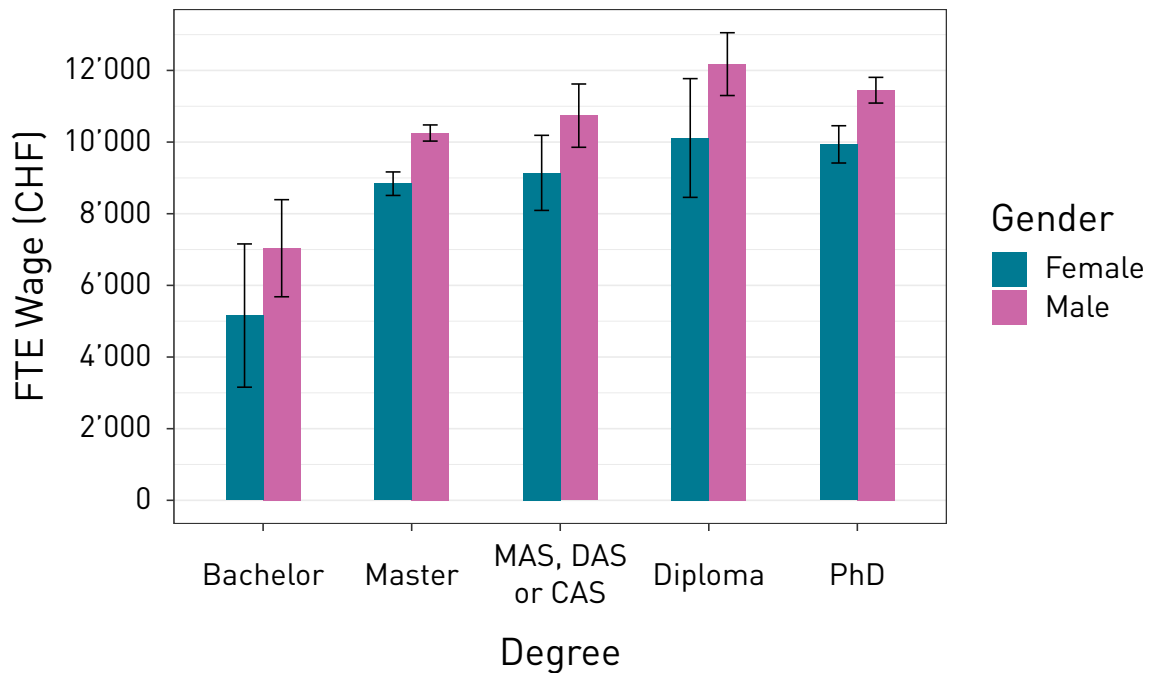


Notes: The figure demonstrates the distribution of monthly full-time equivalent wages and their mean for female and male respondents. The sample used for this plot consists of 747 female and 1'807 male employed respondents. Female respondents, on average, earn about 14.2% less than male respondents.

Figure 3.6 shows mean monthly FTE wages and the corresponding 95% confidence intervals for female and male respondents by type of degree. The figure shows that the pay differences between men and women are observed for all types of degree and hold even among those with the same degree.

To analyze the extent to which the pay differences can be explained by differences in observed characteristics between female and male respondents, we estimated a linear regression model for monthly FTE wages. We regress the logarithm of FTE wages on the relevant observed personal and job-related characteristics of the respondents including

Figure 3.6: Mean FTE Wages by Type of Degree and Gender



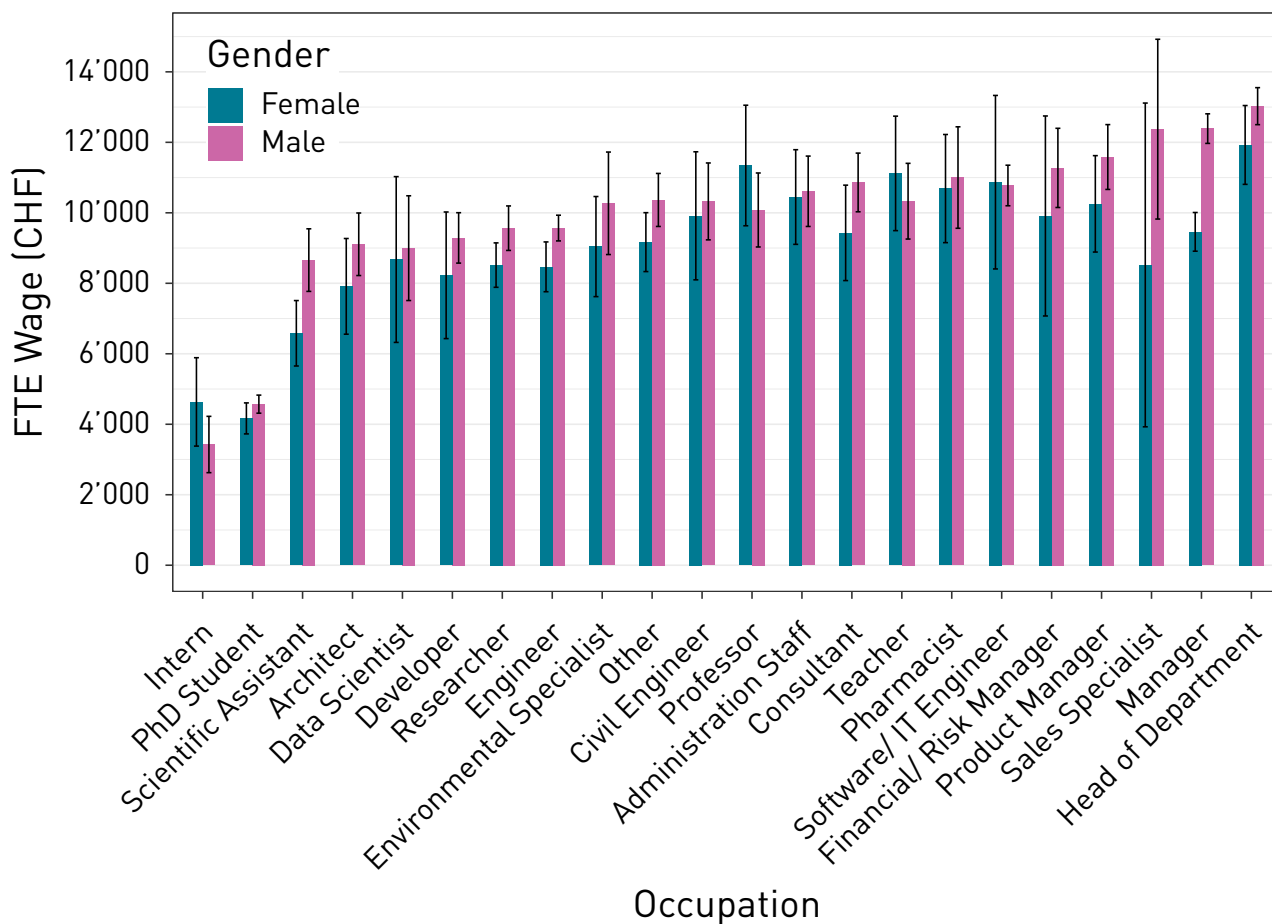
Notes: The figure illustrates mean monthly full-time equivalent wages for female and male respondents by type of degree. Vertical bars reflect the 95% confidence intervals of the mean values. The gender pay differences are present among respondents all types of degrees.

their gender, degree, age, work experience, tenure, field of study, occupation, full-time equivalents, position in the firm, and the location (country) of work. The estimated coefficient on the binary variable indicating the gender (1 represents a male respondent and 0 represents a female one) is 0.073 and is statistically significant at a 1% significance level. This means that a female respondent earn on average 7.3% less than her male counterpart, holding all the other observed characteristics mentioned above constant. In other words, out of the 14.2% difference in average wages, 6.9 percentage points can be attributed to observed differences in characteristics between male and female survey respondents. However, the remaining 7 percentage points cannot be explained by these observed differences in characteristics. This unexplained wage gap could, but does not have to be, a sign of gender pay discrimination because it represents pay differences between observationally equivalent workers.

Figure 3.7 depicts mean monthly FTE wages and the corresponding 95% confidence intervals for different occupations, separately for each gender. The occupations are ordered according to the mean wage of the occupation in the total sample. We observe that aver-

age FTE wages of professors and teachers are higher for female respondents compared to male respondents. However, the large confidence intervals indicate that the differences are not statistically significant. For most occupations, the mean wage is larger for men. In some occupations the difference is relatively larger; male managers, for example, earn about 31% more than female directors. The interesting point about these managerial occupations is that we expect that men and women who reach leadership positions in their firms have similar qualifications; yet, if anything, pay differences are even larger on this level. This result mirrors the well-known finding that the gender wage gap tends to increase, the higher up you go on the corporate ladder.¹

Figure 3.7: Mean FTE Wages by Occupation and Gender



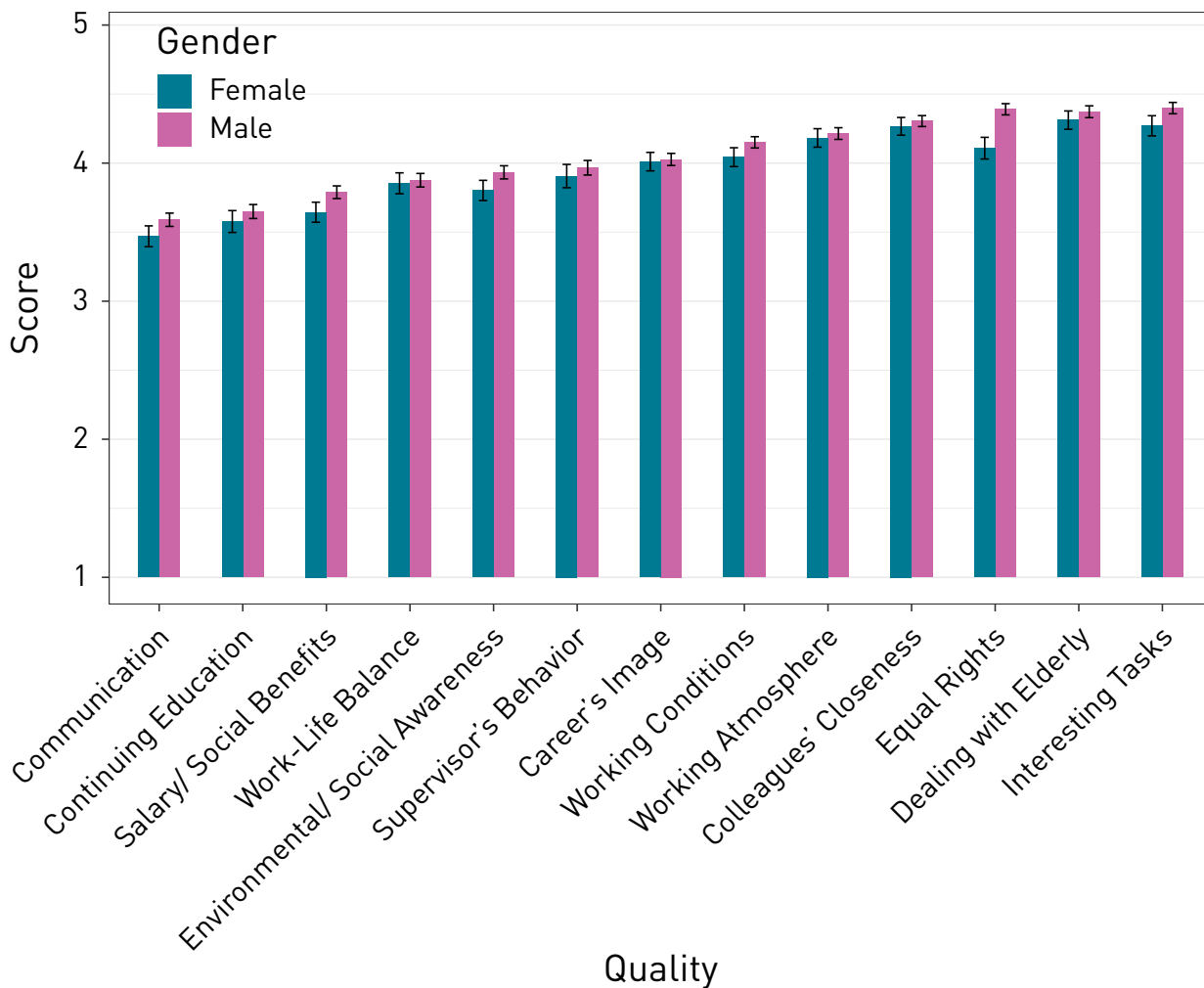
Notes: The figure shows mean monthly full-time equivalent wages for female and male respondents by occupation. Vertical bars reflect the 95% confidence intervals of the mean values. Occupations were ordered based on their mean wage in the whole sample. The wage differences are relatively larger managerial occupations.

¹Federal Statistical Office, Gender Equality Statistics 2019 (Accessed on 25/05/2020)

3.3 Differences in Working Conditions

Figure 3.8 shows how men and women rate different aspects of their jobs. Respondents were asked to rate these job aspects on a scale from 1 to 5. Women appear to be less satisfied, on average, with almost all job aspects. For instance, women are on average less satisfied with equal rights, with a mean score of 4.1 compared to a mean score of 4.4 for men. The difference is statistically significant at a 1% level. Women are also less satisfied with their salary and social benefits. The difference is 0.2 points.

Figure 3.8: Working Conditions by Gender

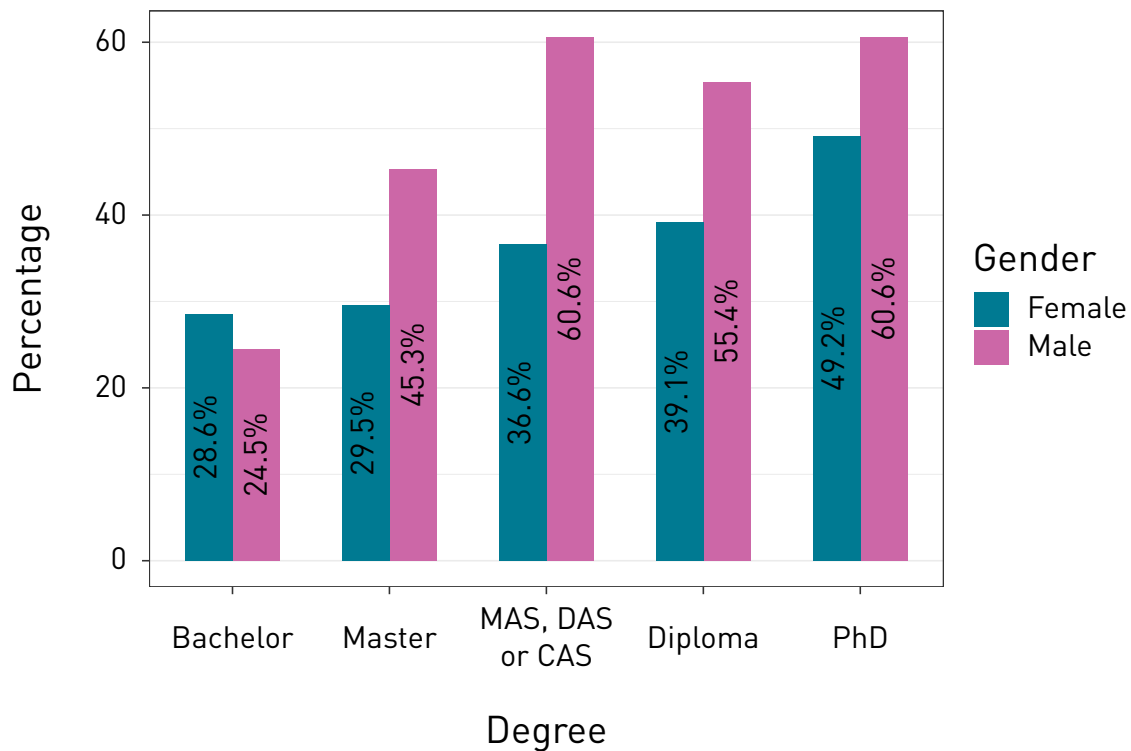


Notes: The figure shows mean scores of different job aspects for female and male respondents. Vertical bars reflect the 95% confidence intervals of the mean values.

3.3.1 Leadership

Analyses of the survey data also revealed gender differences in the probability to have a leadership position. While 50% of male respondents have personnel responsibility, only about 35% of female respondents have this opportunity. Figure 3.9 demonstrates the share of female and male respondents with different degrees who have personnel responsibilities. The figure shows that there are sizeable differences in the share of survey participants with leadership responsibilities between female and male respondents with the same degree.

Figure 3.9: Share of Female and Male Respondents with Personnel Responsibility by Type of Degree

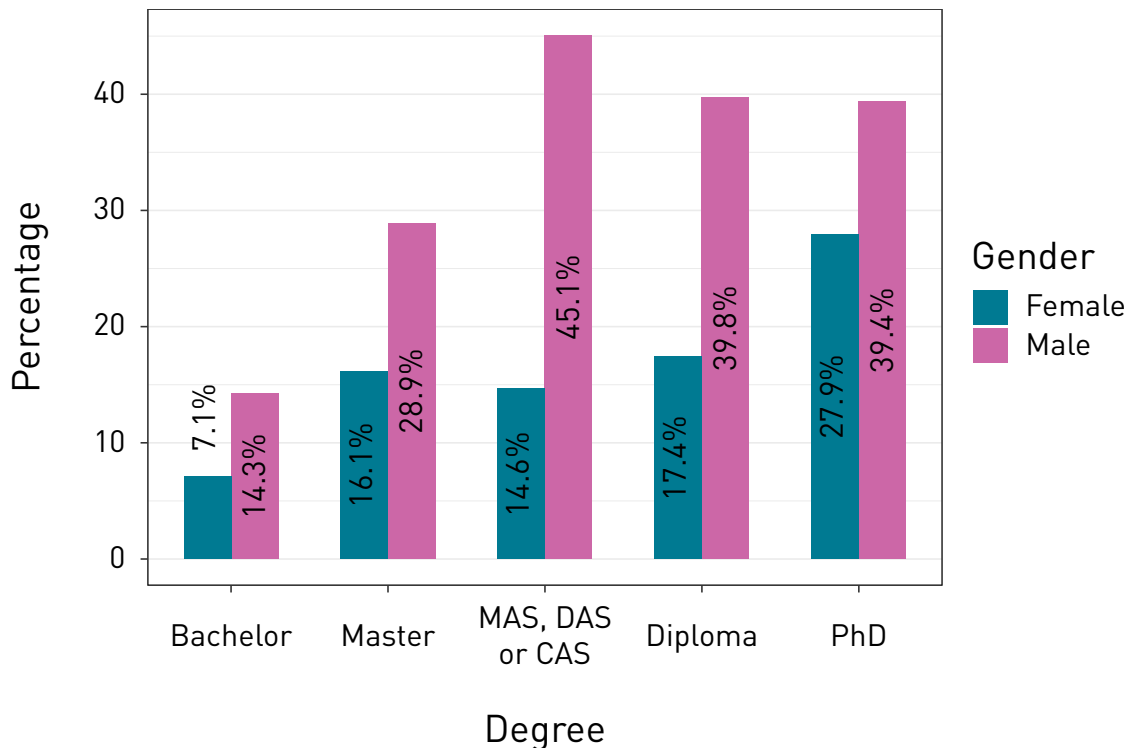


Notes: The figure shows the share of female and male respondents who have a personnel responsibility by type of degree. We observe sizeable gender differences in this share.

We find similar results if we use respondents' answers to the question on their position within their firm. 32% of male respondents respond to have a management or leadership position in their firm. The figure for women is 19%. Figure 3.10 shows the gender differences in the share with a management or leadership position by type of degree. The differences between men and women are large. For example, while about 40% of male

respondents with a diploma are in management positions, only about 17.4% of female respondents with the same degree have such positions.

Figure 3.10: Share of Female and Male Respondents in Management or Leadership Positions by Type of Degree



Notes: The figure shows the share of female and male respondents who have a management or leadership positions by type of degree. There is a large difference between female respondents and their male counterparts with the same degree.

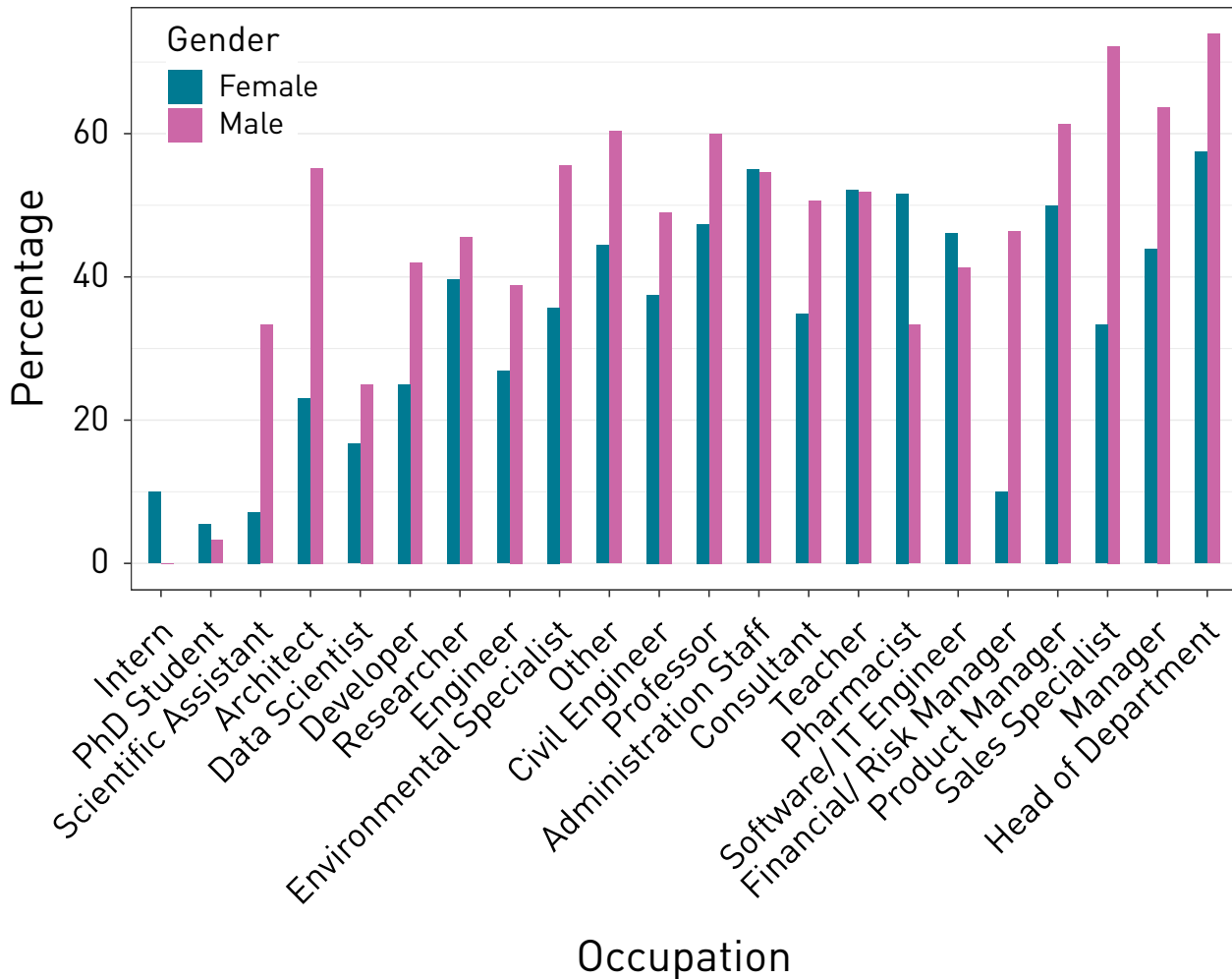
3.3.2 Having Children

Interestingly, there are also gender differences in the family situation in our sample. While 60% of male respondents older than 29 have children, 50% of female respondents in the same age group have children. One explanation for these results is that they are the consequence of the well-known difficulties of working women to have children, which can induce employed women to decide not to have children or, alternatively, to stop working when they have children.

Figure 3.11 illustrates the share of female and male respondents who have children by occupation. Occupations are ordered by mean FTE wages, from the lowest- to the highest-

paying. The differences are large for the occupations with higher average wages. While 64% of the male managers have children, the figure is 44% for female managers. These results are consistent with the fact that working women may face a compromise, especially in higher-paying occupations, between having children and following up on their career.

Figure 3.11: Share of Female and Male Respondents Having Children by Occupation



Notes: The figure shows the share of female and male respondents with different occupations who have children. Occupations are ordered from the lowest- to the highest-paying. The differences are large for the occupations with higher wages.

Appendix A

Survey Questionnaire

Below, there are the related questions posed in the survey questionnaire with the choice sets whenever there was one.

Diese Fragen beziehen sich auf Ihr letztes Studium an der ETH.

1. In welchem Jahr haben Sie abgeschlossen?
2. In welcher Fachrichtung?
 - a. Agrarwissenschaften
 - b. Architektur
 - c. Bauingenieurwissenschaften
 - d. Biologie
 - e. Biowissenschaften und Technik
 - f. Chemie
 - g. Chemieingenieurwissenschaften
 - h. Elektrotechnik und Informationstechnologie
 - i. Erdwissenschaften
 - j. Geistes-, Sozial- und Staatswissenschaften
 - k. Geomatik und Planung
 - l. Gesundheitswissenschaften und Technologie
 - m. Informatik

- n. Interdisziplinäre Ingenieurwissenschaften
 - o. Interdisziplinäre Naturwissenschaften
 - p. Interdisziplinäre Naturwissenschaften
 - q. Management, Technologie und Ökonomie
 - r. Maschineningenieurwissenschaften
 - s. Materialwissenschaft
 - t. Mathematik
 - u. Pharmazeutische Wissenschaften
 - v. Physik
 - w. Rechnergestützte Wissenschaften
 - x. Umweltingenieurwissenschaften
 - y. Umweltnaturwissenschaften
3. Welchen Abschluss haben Sie erworben?
- a. Bachelor
 - b. Master/Lizentiat
 - c. Doktorat
 - d. MAS, DAS oder CAS
 - e. Anderer Abschluss: (Bitte geben)
4. Bitte geben Sie Ihr Alter an:
- a. Unter 25 Jahre
 - b. zwischen 25 und 29 Jahre
 - c. zwischen 30 und 34 Jahre
 - d. zwischen 35 und 39 Jahre
 - e. zwischen 40 und 44 Jahre
 - f. zwischen 45 und 54 Jahre
 - g. zwischen 55 und 64 Jahre
 - h. über 64 Jahre

5. Haben Sie Kinder?
 - a. Keine Kinder
 - b. Ein Kind oder mehrere Kinder unter 16 Jahren
 - c. Ein Kind oder mehrere Kinder über 16 Jahren
 - d. Möchte ich nicht angeben

6. Bitten geben Sie Ihr Geschlecht an:
 - a. Männlich
 - b. Weiblich
 - c. Divers
 - d. Möchte ich nicht angeben

7. Sind Sie berufstätig?
 - a. Ja, ich bin berufstätig
 - b. Nein, aber ich war berufstätig in den letzten 3 Jahren
 - c. Nein, und ich war nicht berufstätig in den letzten 3 Jahren

8. Ich bewerte meinen
 - a. aktuellen Job
 - b. Ex-Job

Bitte bewerten Sie im Folgenden den aktuellen/Ihren letzten (Haupt-) Job.

9. Bitte geben Sie den Namen des Arbeitgebers an, den Sie bewerten möchten.
 - Land:
 - Bundesland/Kanton:
 - Niederlassung/Betrieb:
 - Branche:

10. Bitte wählen Sie Ihre Position:
 - a. Zeitarbeit / Personalleasing

- b. Angestellte/r oder Arbeiter/in
 - c. Freelance/Freiberuflich
 - d. Praktikant/in
 - e. Management/Führung
 - f. Werkstudent/in
11. Wie zufrieden sind/waren Sie insgesamt mit Ihrem Job?
- a. 1 b. 2 c. 3 d. 4 e. 5
12. Bitte geben Sie an:
- a. Ich arbeite Vollzeit
 - b. Ich arbeite Teilzeit
13. Bitte geben Sie Ihr Arbeitspensum an:
- a. Vollzeit: 91-100 %
 - b. Teilzeit: 81-90 %
 - c. Teilzeit: 61-80 %
 - d. Teilzeit: 41-60 %
 - e. Teilzeit: 21-40 %
 - f. Teilzeit: 0-20 %
14. Bitte wählen Sie Ihre Berufsbezeichnung aus, indem Sie anfangen, diese in folgendes Textfeld zu tippen:
15. Bitte geben Sie Ihre Berufserfahrung an:
- a. Praktikum
 - b. Weniger als 1 Jahr
 - c. 1-3 Jahre
 - d. 4-6 Jahre
 - e. 7-9 Jahre
 - f. 10+ Jahre

16. Wie lange arbeiten/arbeiteten Sie für den Betrieb, den Sie bewerten?
- a. Weniger als 1 Jahr
 - b. 1-3 Jahre
 - c. 4-6 Jahre
 - d. 7-9 Jahre
 - e. 10+ Jahre
17. Haben/hatten Sie Personalverantwortung?
- a. Ja
 - b. Nein
18. Bitte geben Sie Ihr monatliches Bruttogehalt im Job an, den Sie bewerten:
- a. Jahresgehalt - Brutto
 - b. Monatsgehalt (12x) - Brutto
 - c. Monatsgehalt (13x) - Brutto
 - d. Monatsgehalt (14x) - Brutto

Bitte bewerten Sie folgende Faktoren anhand der Sterneskala:

19. Unternehmenskultur:
- a. Arbeitsatmosphäre: ● 1 ● 2 ● 3 ● 4 ● 5
 - b. Kommunikation: ● 1 ● 2 ● 3 ● 4 ● 5
 - c. Kollegenzusammenhalt ● 1 ● 2 ● 3 ● 4 ● 5
 - d. Work-Life-Balance: ● 1 ● 2 ● 3 ● 4 ● 5
 - e. Vorgesetztenverhalten ● 1 ● 2 ● 3 ● 4 ● 5
 - f. Interessante Aufgaben ● 1 ● 2 ● 3 ● 4 ● 5
20. Vielfalt:
- a. Gleichberechtigung: ● 1 ● 2 ● 3 ● 4 ● 5
 - b. Umgang mit Älteren: ● 1 ● 2 ● 3 ● 4 ● 5

21. Arbeitsumgebung:

a. Arbeitsbedingungen: ● 1 ● 2 ● 3 ● 4 ● 5

b. Umwelt-/Sozialbewusstsein: ● 1 ● 2 ● 3 ● 4 ● 5

22. Karriere:

a. Gehalt/Sozialleistungen: ● 1 ● 2 ● 3 ● 4 ● 5

b. Image: ● 1 ● 2 ● 3 ● 4 ● 5

c. Karriere/Weiterbildung: ● 1 ● 2 ● 3 ● 4 ● 5

Appendix B

Mincer Regression

As mentioned in chapter 3.2, we estimated a linear regression model for monthly full-time equivalent (FTE) wages. We regressed the logarithm of FTE wages on the relevant characteristics of the respondents including their gender, degree, age, work experience, tenure, field of study, occupation, full-time equivalents, position in the firm, and the location (country) of work. Table B.1 shows the results of this Mincer regression in column 2, and compares it to the unconditional regression of the logarithm of FTE wages on gender in column 1. The coefficient on the binary variable indicating the gender (1 represents a male respondent and 0 represents a female one) is 0.073 in the mincer regression model and is statistically significant at a 1% significance level. This means that a female respondent will earn on average 7.3% less than her male counterpart, with the same characteristics except gender. In other words, out of about 16% difference in average wages of female and male respondents (the coefficient on gender in the unconditional regression model), 8.7 percentage points can be attributed to the differences between the samples of men and women in the survey; but the remaining 7.3 percentage points cannot be explained by their different characteristics and correspond to the unexplained wage gap.

There are other interesting findings from this regression. We can observe that the coefficients of different levels of work experience are statistically significant at a 5% level and their values show that, *ceteris paribus*, a respondent with a higher work experience earns more. The F-test for these coefficients shows that these coefficients are jointly significant at a 1% significance level. The same is true for the respondents' degrees. A respondent with a higher degree earns more than her counterpart with a lower degree. The coefficients on degree levels are also jointly significant at a 1% level. Another notable result is that an ETH graduate who is working in Switzerland earns almost 30% more than her

counterpart who is working in Germany.

Another interesting point is the coefficients on fields of study: electrical engineering and information technology; information technology; management, technology, and economics; mathematics; mechanical engineering; and physics are about 0.10 or higher and are statistically significant at a 5% level. Since the reference category for field of study is agricultural sciences, this means that the graduates of the aforementioned fields of study earn almost 10% more than observationally identical who has studied agricultural sciences.

Table B.1: Mincer Regression Results (Dependent Variable: log(FTE Wage))

	Unconditional		Conditional	
	Coefficient	S.E.	Coefficient	S.E.
Gender: Male	0.166***	0.019	0.073***	0.015
Reference for Age:		Under 29 Years		
Age: 30-34 Years			0.035	0.022
Age: 35-39 Years			0.06**	0.028
Age: 40-44 Years			0.127***	0.033
Age: 45-54 Years			0.162***	0.034
Age: 55-64 Years			0.182***	0.036
Age: Above 64 Years			0.267***	0.063
Reference for Work Experience:		1-3 years		
Work Experience: Internship			-0.174**	0.061
Work Experience: Less than 1 Year			-0.104**	0.033
Work Experience: 4-6 Years			0.057**	0.024
Work Experience: 7-9 Years			0.177***	0.028
Work Experience: 10+ Years			0.224***	0.029
Reference for Tenure:		1-3 years		
Tenure: Less than 1 year			0.032	0.021
Tenure: 4-6 Years			-0.007	0.019
Tenure: 7-9 Years			0.003	0.023

Tenure: 10+ Years	0.038*	0.021
Reference for Degree:		Bachelor
Degree: Master	0.129**	0.041
Degree: MAS, DAS or CAS	0.069	0.051
Degree: Diploma	0.101**	0.050
Degree: PhD	0.164***	0.043
Reference for Workload:		Part-time 0-60%
Workload: Part time: 81-90%	0.019	0.023
Workload: Full time: 91-100%	-0.105***	0.016
Reference for Position:		Employee
Position: Freelance	-0.123**	0.050
Position: Intern	-0.659***	0.072
Position: Management / leadership	0.115***	0.016
Position: Temporary	-0.208***	0.051
Reference for Country:		Switzerland
Country: Germany	-0.325***	0.024
Country: Austria	-0.439***	0.069
Country: Other	-0.469***	0.030
Reference for Field of Study:		Agricultural Sciences
Field: Architecture	-0.003	0.046
Field: Biology	0.062	0.039
Field: Chemical engineering	0.115*	0.060
Field: Chemistry	0.062	0.044
Field: Civil Engineering	0.052	0.043
Field: Computational Sciences	0.042	0.098
Field: Earth Sciences	0.026	0.044
Field: Electrical engineering and IT	0.116**	0.037
Field: Environmental engineering	0.008	0.044
Field: Environmental Sciences	0.054	0.037
Field: Food Science	0.015	0.047

Field: Geomatics and Planning	0.01	0.051
Field: Health Sciences and Tech.	0.04	0.044
Field: Humanities, Soc. and Pol. Sci.	0.048	0.057
Field: Interdisciplinary Eng. Sci.	0.045	0.089
Field: Interdisciplinary Nat. Sci.	0.054	0.072
Field: IT	0.118**	0.039
Field: Life sciences and technology	0.097*	0.056
Field: Management, Tech. and Econ.	0.104**	0.041
Field: Materials science	0.07	0.046
Field: Mathematics	0.128**	0.047
Field: Mechanical Engineering	0.095**	0.035
Field: Pharmaceutical Sciences	0.091	0.063
Field: Physics	0.109**	0.040
Observations	2'493	2'493
R ²	0.028	0.600
Adjusted R ²	0.028	0.588

Notation:

* p<0.1; ** p<0.05; *** p<0.01

Notes: The table shows the results for the mincer regression, i.e. regressing logarithm of monthly full-time equivalent wages on respondents' relevant characteristics, and the unconditional regression of logarithm of FTE wages on gender. The mincer regression was also conditioned on 22 occupation categories, which are not displayed in the table. Note that all of the independent variables are categorical. We can see that the coefficient on the variable "gender-male" which represents a dummy variable for being male is 0.073 and is significant at a 1% significance level. This reflects an almost 7.3% unexplained wage gap between the female and male respondents.