ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Doctorat II

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26.06.2012– CIRCULATION TO DOCTORAL SCHOOL

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1. Executive summary

EPFL sets a high priority on the quality of its education. For the doctorate, the quality of education is also closely related to the quality of the research performed. Therefore, every seven years EPFL-EDOC conducts an extensive survey of its doctoral population to assess more broadly and in greater depth the quality of its doctoral education. On the basis of the results of the survey a set of corrective and/or reinforcement long term actions is implemented and their effectiveness is evaluated in the next seven-year survey. This quality assurance methodology was implemented with the first survey performed in 2005, only two years after the introduction of the Doctoral School. The just completed project Excellence in Doctoral Education (EIDE) was launched as a response to the problems identified in the 2005 survey. The 2012 second survey, conducted with a doctoral student population entirely integrated in the Doctoral School, now permits an evaluation of the impact of the EIDE project.

Overall, the 2012 survey reveals an encouraging level of satisfaction of the doctoral students, while still showing significant room for improvement for instance in supervision, variety of doctoral courses and recruitment procedures. The next section provides a summary of the survey results.

1.1 Summary of survey results

1.1.1 Survey Responses and the Doctoral Population

The response rate to the Doctorat II survey was 62%, down from a rate of 78% for the Doctorat I survey in 2005. There were 1,217 respondents to the 2012 survey. The survey respondents are representative of the broader population of doctoral students in terms of sex, doctoral programmes and length of registration.

The doctoral population has changed since 2005. In 2012 there were 1,952 doctoral students, up by 47% from the 2005 population of 1,330. The population is now more international, with 28% having Swiss-residency status (compared to 41% in 2005) and 30% coming from outside Europe (compared to 17% in 2005). Now all students are in the Doctoral school, as compared to 58% in 2005.

1.1.2 Global satisfaction

85% are satisfied with the conditions under which they are conducting their thesis research (as compared to 90% in 2005). 90% identified that the advice from their thesis director was useful or very useful (in 2005, 73% described the scientific guidance they received as excellent or good).

1.1.3 Choosing EPFL

EPFL was the institution of choice for 93% of them. The most commonly cited other places they applied were ETHZ, MIT, UC Berkley and Cambridge. The reputation both of EPFL in general (40%) and of a particular lab/professor in particular (36%) was the most common reasons for choosing EPFL. The percentage citing these two factors has increased since 2005. More recent entrants are less likely to cite “I was already at EPFL” compared to those who entered in 2007.

1.1.4 Arriving in EPFL

88% reported no difficulty with the EPFL application process, though the proportion having difficulties has risen to 16% of those who matriculated in 2011. Nine-tenths said that the welcome they received in their lab was either excellent or good. Those who attended a welcome day/welcome week were more likely to describe their welcome in their doctoral programme as

either excellent or pretty good when compared to those who did not attend such an event. Over a period of time, respondents settle in and become happier with their social life, however those with non-resident status, those whose mother tongue is not French and those from Asia show lower levels of satisfaction.

The candidacy exam is seen as being useful to help them understand their research, to motivate them to make progress and to practice communicating their ideas. Those who have completed it are less likely to describe it as just a hurdle to get though.

1.1.5 The Distribution of Work

Survey respondents reported that they worked on average in the last semester: 64% of their time on their doctoral research; 10% of their time on their own training; 15% of their time on their teaching; 8% of their time on other research activities; 4% of their time on other activities in their lab.

There were wide variations in their use of time, with some carrying a much heavier weight of teaching than others. 24% indicated "I am not involved in teaching activities". Globally, 33% did no teaching in an average week in the last semester – this varies from 4% to 63% depending on the doctoral programme. For some, their teaching load was cited as a cause of stress and a heavy workload.

1.1.6 Supervision

78% meet their thesis director at least every month, broadly the same as in 2005. However, 29% feel they do not get scientific advice from their thesis director often enough. This satisfaction trend is associated with the number of theses being supervised by a thesis director. As numbers of dissertations supervised by the thesis director goes up, the frequency of meetings between the respondent and their director goes down, the proportion of respondents saying they do not get enough advice goes up, and their rating of the utility of the advice they receive goes down.

1.1.7 Training Activities

53% either strongly agree or mainly agree that they find enough scientific courses at doctoral level relevant to their interests. 87% agree or strongly agree that the courses they take are of good quality. Ratings of quality and relevance of courses were broadly similar in 2005.

1.1.8 Stress and Social Supports

17% feel that stress is either starting to overwhelm them or is already overwhelming them. This suggests that somewhere between 284 and 377 people in the broader population of doctoral students are either starting to be overwhelmed or are already overwhelmed due to the stress they are feeling.

Of those who feel that stress is either starting to overwhelm them or is already overwhelming them, supervision, managing work-life balance, and workload are their principal sources of stress. Perceived problems with supervisor relationships and with perceived utility of advice are associated with notable increases in starting to feel or feeling overwhelmed by stress.

18% of those who had difficulties reported that they had no-one to talk to about them or that they found no help. Only 46% said they had a mentor designated as part of their doctoral programme.

2. Introduction

The Doctorat II questionnaire follows up on the 2005 questionnaire (Doctorat I). The questionnaire was compiled by the Dean of the Doctoral School in consultation with a working group composed of doctoral programme directors, thesis directors, doctoral students and doctoral programme administrative assistants. It was developed in collaboration with CRAFT and HR (for links to Atmos II), and validated by the Steering Committee (which also suggested some further modifications) (the complete questionnaire is available in the appendix III).

Doctorat II includes a range of questions that, for comparative purposes, mirror several of those asked in 2005. Given the significant changes in doctoral education at EPFL since 2005, including the now total inclusion of doctoral students within EDOC, many questions needed to be adapted and a number of new questions have been added. Particular emphasis has been given to course offers and supervision, two issues highlighted in the results of Doctorat I and still cited in responses to the on-going end of thesis evaluation.

Following approval by the Direction and translation into French, the questionnaire was administered by an external company - MIS-Trends - in February 2012. The questionnaire was sent to all 1,952 doctoral students then registered (the total population in 2005 stood at 1,330 – an increase of 47% in seven years). A number of reminders were sent to those who had not completed the questionnaire and thesis directors were also contacted to encourage their doctoral students to complete the questionnaire. There were 1,217 respondents to the survey; this represents a response rate of 62%. The response rate for the 2005 survey was 78%, for a significantly shorter survey (54 questions in 2005 compared to up to 74 in 2012).

In addition to the survey responses, a range of additional data was also supplied from IS Academia (on doctoral programme, continent and country of origin, mother tongue, number of thesis being directed by thesis director and so on), and integrated into the data set.

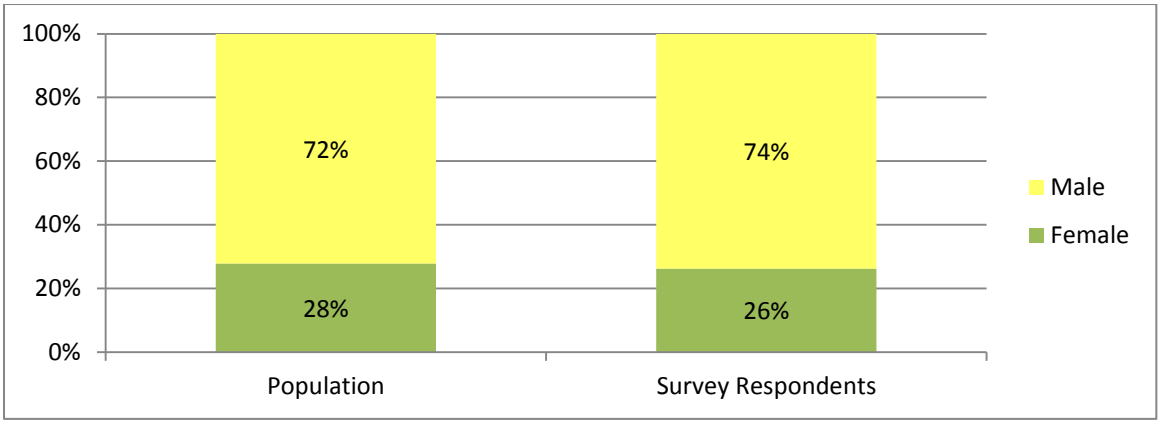
The data set was analysed and the report prepared by Roland Tormey of CRAFT. Jacques Giovanola prepared the 'Executive summary' and 'Discussion and conclusions' sections. Open questions were codified and analysed by David Bréchet, Ingrid Le Duc, Nadine Stainier and Jean-Louis Ricci of CRAFT.

3. Who are the respondents to the second EPFL Doctoral Survey?

Of the 1,217 respondents, just over one-quarter (26%) were female (Chart 1). Women make up 28% of the population of doctoral students in EPFL that were surveyed (545 of the 1,952 doctoral students surveyed). As such, the survey respondents are representative of the broader population in terms of their gender.

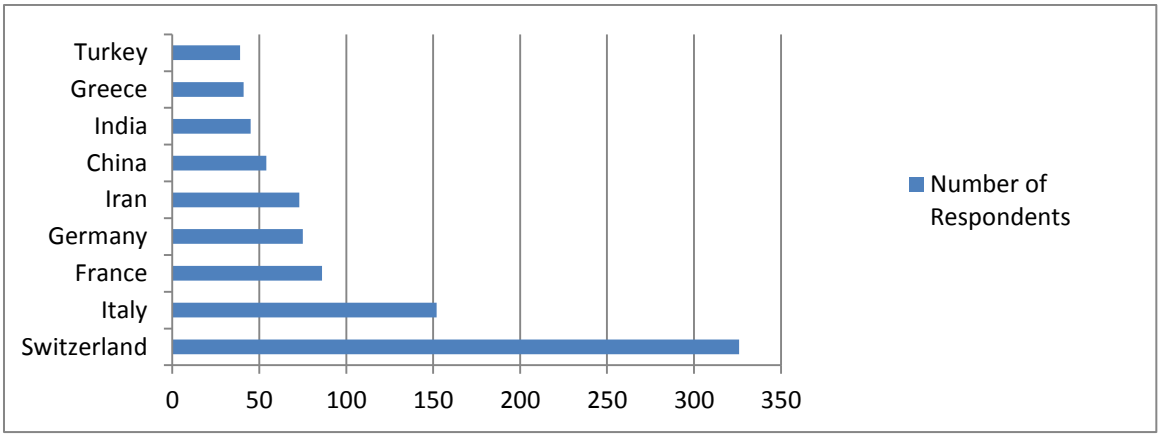
In total, 74 different countries of first origin were represented among the respondents, with the majority (77%) coming from Europe and with Asia being the second most frequently mentioned continent of origin (18%). The Americas accounted for 5% of respondents, with Africa and Oceania accounting for less than 1% between them. While Switzerland is the most commonly cited country of first origin, almost three-quarters of the respondents (73%) came from countries other than Switzerland (see Chart 2).

Chart 1: Sex of survey respondents and of broader population



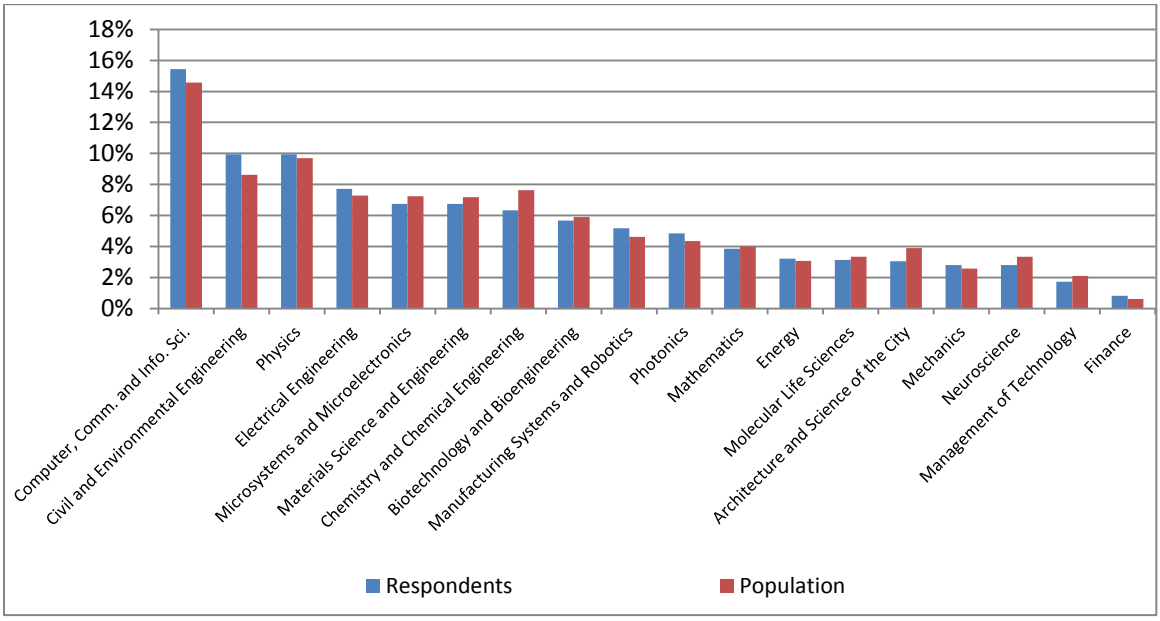
Note: Data from IS Academia

Chart 2: Country of origin of survey respondents



Note: Data from IS Academia. 65 different countries each accounting for less than 3% of respondents (326 respondents in total) not included in this chart.

Chart 3.1: Percentage of survey respondents and of doctoral population in each Doctoral Programme

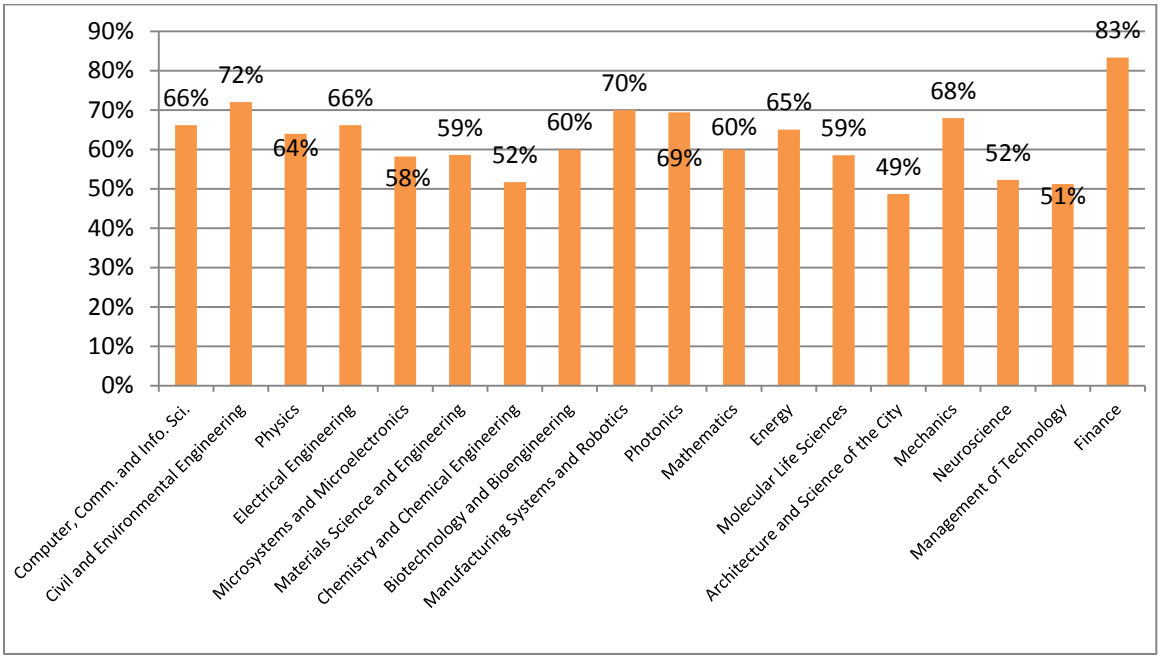


Note: Data from IS Academia. One respondent "hors programme" has been excluded from this chart. Respondents with "Structure" and "Environment" programme registrations have been included with Civil and Environmental Engineering Programme.

The respondents were enrolled in 18 different doctoral programmes (Chart 3.1). Computer, Communication and Information Science Programme accounted for 15% of respondents (188 respondents in total), with the Physics and the Civil and Environmental Engineering Programmes each accounting for 10% (121 respondents from each programme). Chart 3.1 shows that the percentage of the survey respondents in each doctoral programme is broadly speaking the same as their percentage in the overall population of doctoral students. Again, this confirms that the survey respondents are representative of the population in terms of the doctoral programme in which they are involved. The response rate per doctoral programme is included in Chart 3.2.

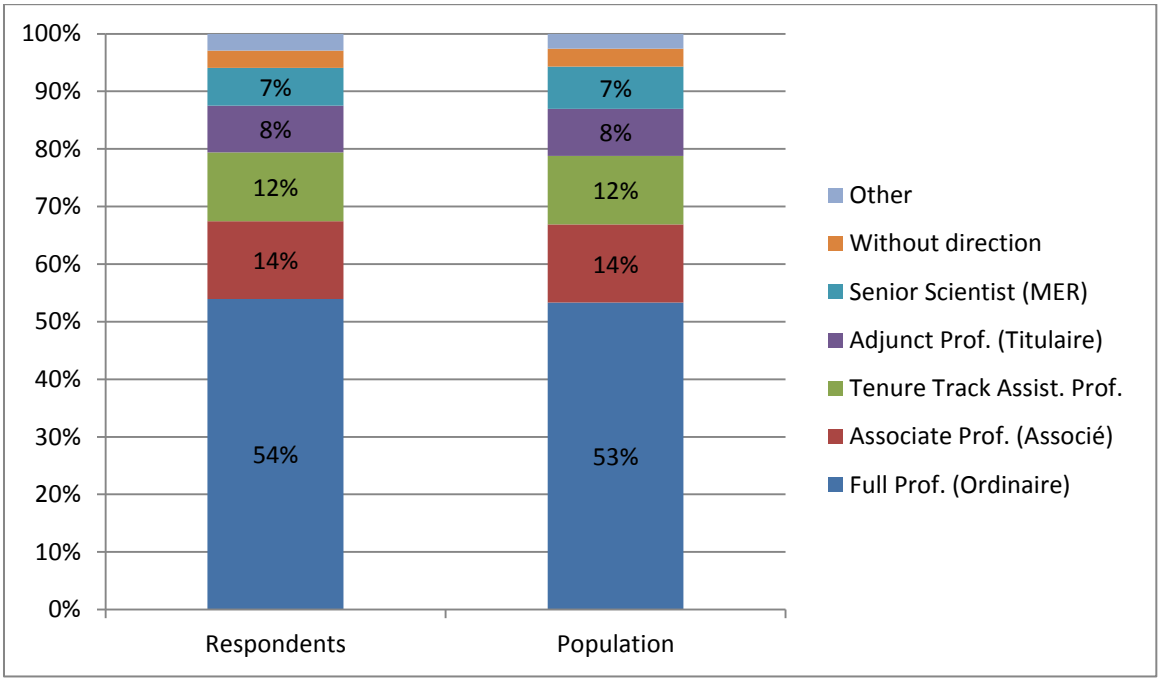
It should be noted that the relatively small size of the number of respondents (and of the population) in some doctoral programmes means that a small change in absolute numbers of participants choosing any given option could be presented as a large change in percentage response. For that reason, one must be careful in analysing charts presented by doctoral programme since, for programmes with relatively small numbers of respondents, a small change in absolute number who have chosen a particular option could be mistakenly seen to be a major change. For that reason, programmes with smaller numbers of respondents (less than 50) are identified with an asterisk in the analysis of questions by doctoral programme in both the text and in the appendix.

Chart 3.2: Response rate by Doctoral Programme



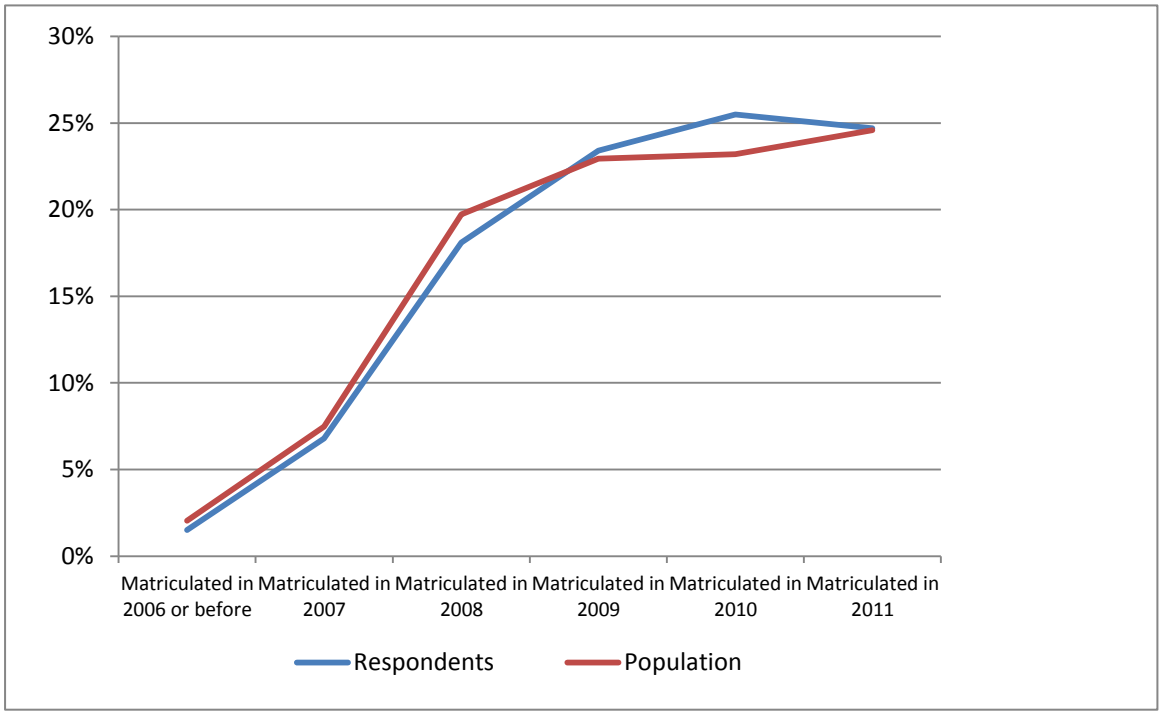
For over half of respondents (54%) their thesis director is a Full Professor. 14% are being directed by an Associate Professor, and 12% are being directed by a Tenure Track Assistant Professor. 8% are being directed by an Adjunct Professor. Of the remaining 12%, 3% are identified as being "without direction" (see Chart 4) (this "without direction" group is made up of recently matriculated respondents who are either on fellowships or on programmes which allow them a period of time before choosing an area of study and a thesis director). As can be seen from Chart 4, the survey respondents are almost identical to the overall population in terms of the status of their doctoral thesis director. Once more, this reiterates the extent to which the survey respondents appear to be representative of the broader population.

Chart 4: Percentage of survey respondents and of population by status of the doctoral thesis director



Note: Data from IS Academia.

Chart 5: Percentage of survey respondents and of population by date of matriculation of respondents



Note: Data from IS Academia.

Over 50% of respondents matriculated within the last two years (matriculation in 2010 or 2011). Over 90% had matriculated within the last four years (matriculated 2008 or later) (Chart 5). Chart 5 maps the extent to which the survey respondents are, broadly speaking, representative of the wider population of doctoral students in their year of matriculation; it shows clearly that the percentage of

survey respondents who matriculated each year matches very closely the percentage of the wider population who matriculated in that year.

With respect to some of the other features of the survey respondents, 27% had completed prior study in EPFL, while the remaining three-quarters (73%) came from outside EPFL. The large majority of respondents (88%) principally work on their doctorate on the EPFL campus. A further 9% identify that they principally work in an enterprise or a research institute, with 3% citing another location (such as a mixture of Neuchâtel, home, the Laboratory for Hydraulic Machines and another university).

As has been noted above, the Doctorat II survey sought to include the whole population of doctoral students in EPFL - it is obviously better to ask everyone in a population than to draw a sample from that population. However, as the survey was based on a whole population and not a random sample, the conditions which are seen as required for the use of inferential statistics might be regarded as technically not having been met. Nonetheless, the large proportion of doctoral students who responded and the fact that the respondents were found to be representative of the sample as a whole in terms of sex, doctoral programme, thesis direction and year of matriculation, means that inferential statistical analysis can be presented as an aid to the reader in understanding the strength and nature of relationships found.

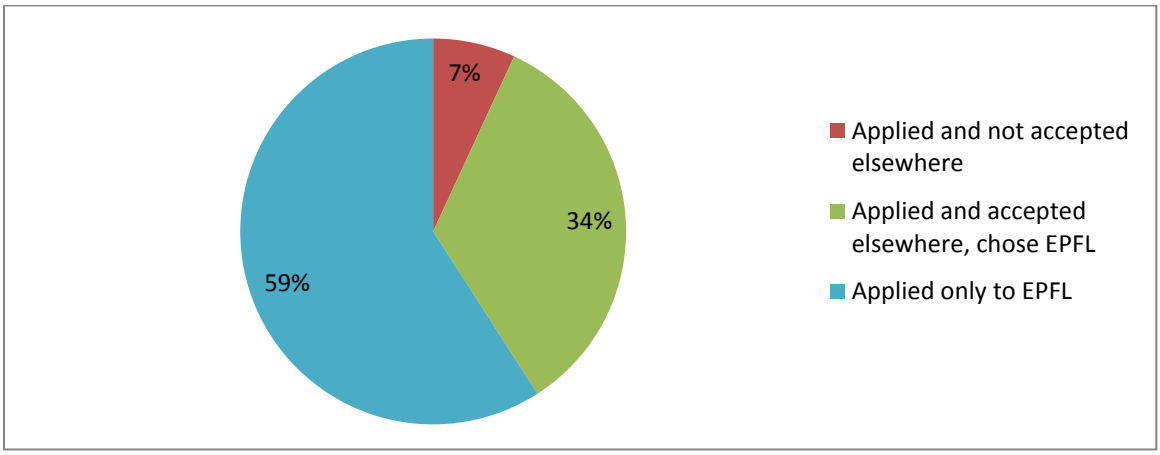
Within this in mind, the 95% confidence interval for responses for the survey respondents as a whole would be between plus or minus 0.6% and plus or minus 2.8%. This would mean, for example, that when 85% of the survey respondents indicate that they are satisfied with the conditions under which they are conducting their thesis research, it would be very unlikely if the actual satisfaction rate in the broader population of doctoral students were lower than 83% or higher than 87%.

4. Choosing EPFL

4.1 Choosing EPFL

EPFL was the location of choice for a doctorate for the vast majority of the respondents, with 59% of respondents indicating that they applied only to EPFL and a further 34% indicating that though they were accepted elsewhere, they chose EPFL. As such, EPFL was the location of choice[1] for PhD study for 93% of survey respondents.

Chart 6: Where did respondents apply for doctoral study?



Note: Based on "Q. 2: What other universities did you apply to?" and Q. 3, 4 and 5: "Was your application accepted?"

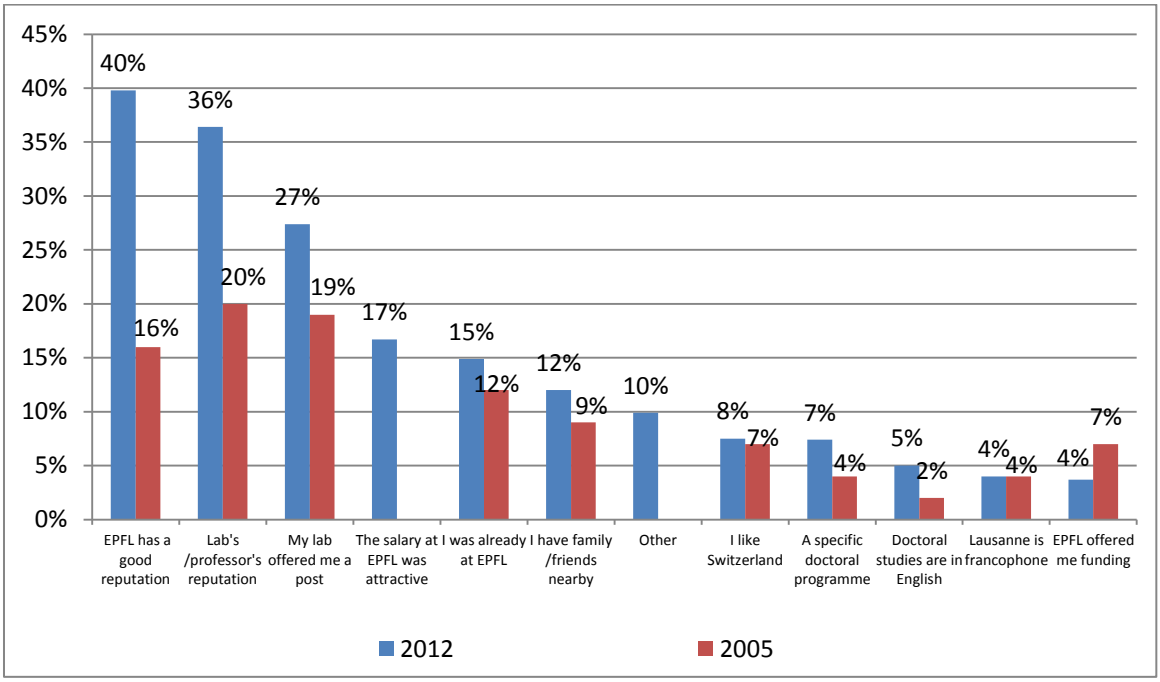
Of the 41% (498 respondents) who applied elsewhere, the most commonly cited other place of application was ETH Zürich, with 98 respondents (20% of those who applied elsewhere) indicating that they had also applied there. About 5% of those who made applications to other universities applied to MIT (26 respondents), UC Berkley (24 respondents) or Cambridge (22 respondents). No other universities were identified by more than a handful of respondents. This pattern is similar to that found in 2005.

Chart 7 shows what respondents identified as the principal reasons for choosing to do their doctorate at EPFL instead of elsewhere. Participants were allowed to choose two principal reasons. As Chart 7 shows, the most prominent reasons related to the reputation of EPFL (40%) or of the professor/lab they applied to study with (36%). Other prominent factors include being offered a post (27% of respondents), the attractiveness of the salary (17%), already being at EPFL (15%) and having family or friends in the region (12%). Language factors were cited by no more than one-tenth of respondents, with studying in English being identified as one of their two principal reasons by 5% and Lausanne being in a Francophone region being identified as a principal reason by 4%. If we were to apply a 95% confidence interval in this case it would indicate that in the wider population we would expect the proportion indicating EPFL's reputation as one of their reasons to be between 37% and 43%. Similarly we would expect the proportion indicating that the lab or professor's reputation was one of their reasons to be between 34% and 39%.

[1] We cannot say what their "first choice" was since that question was not asked and some of the 34% that were accepted elsewhere and chose EPFL may also have been rejected in their "first choice". However we can identify that 719 applied only to EPFL and a further 414 were offered a place in another University but chose EPFL.

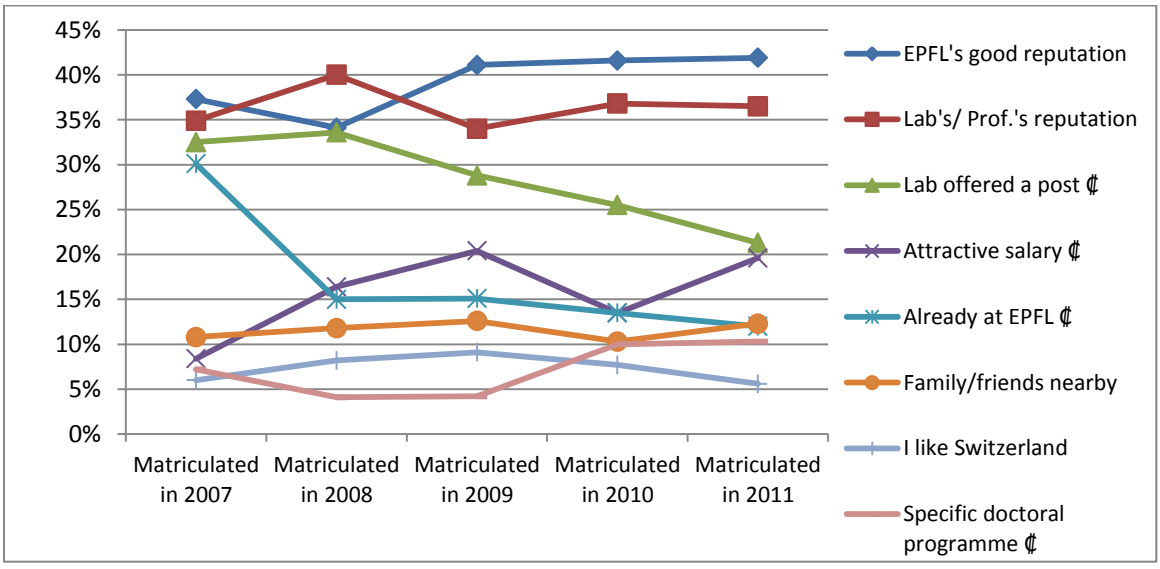
Comparisons with the responses to the same question in the 2005 survey are provided (although care must be taken in making comparisons since the "salary at EPFL was attractive" option did not exist in the 2005 survey). Given the confidence intervals that apply, it would be safe to say that the percentage citing the reputation of EPFL and of the lab or professor have substantially increased since 2005.

Chart 7: What were your (two) principal reasons for choosing doctoral studies at EPFL?



Note: Based on Q.1: "What were your two main reasons for choosing to do your doctoral studies at EPFL instead of elsewhere?" Question responses available in 2005 not identical to those available in 2012, though question and format was the same.

Chart 8: Most common (two) principal reasons for choosing doctoral studies at EPFL by date of matriculation



Note: Based on Q.1: "What were your two main reasons for choosing to do your doctoral studies at EPFL instead of elsewhere?" and on data from IS Academia. 18 respondents that registered in 2006 or before were removed for analysis purposes. Respondents could choose two responses so totals in each year can be more than 100%. Where an association between citing a particular reason and the year of matriculation are significant at p<0.05 level, they are marked with a '¢'.

It is notable that, within the 2012 respondents, there is an association between the date of matriculation and the principal reason cited by respondents for choosing EPFL over the last five years. Over that period the percentage that cited "I was already at EPFL" has declined from 30% to 12%. At the same time the percentage citing "EPFL has a good reputation" has risen slightly from 37% to 42%. The percentage citing the salary has varied widely from year to year and the proportion citing a specific doctoral programme has increased (Chart 8). Using a chi-square statistic we can say that, at the 95% confidence level, year of matriculation is associated with the reason cited for choosing to do doctoral studies at EPFL in the case of "Because of a specific doctoral programme" (p=0.006), "Because my lab offered me a post" (p=0.018), "Because the salary was attractive" (p=0.029), and "Because I was already at EPFL" (p=0.001).

There are differences between doctoral programmes in the principal reasons cited for choosing EPFL (see appendix I - Chart A).

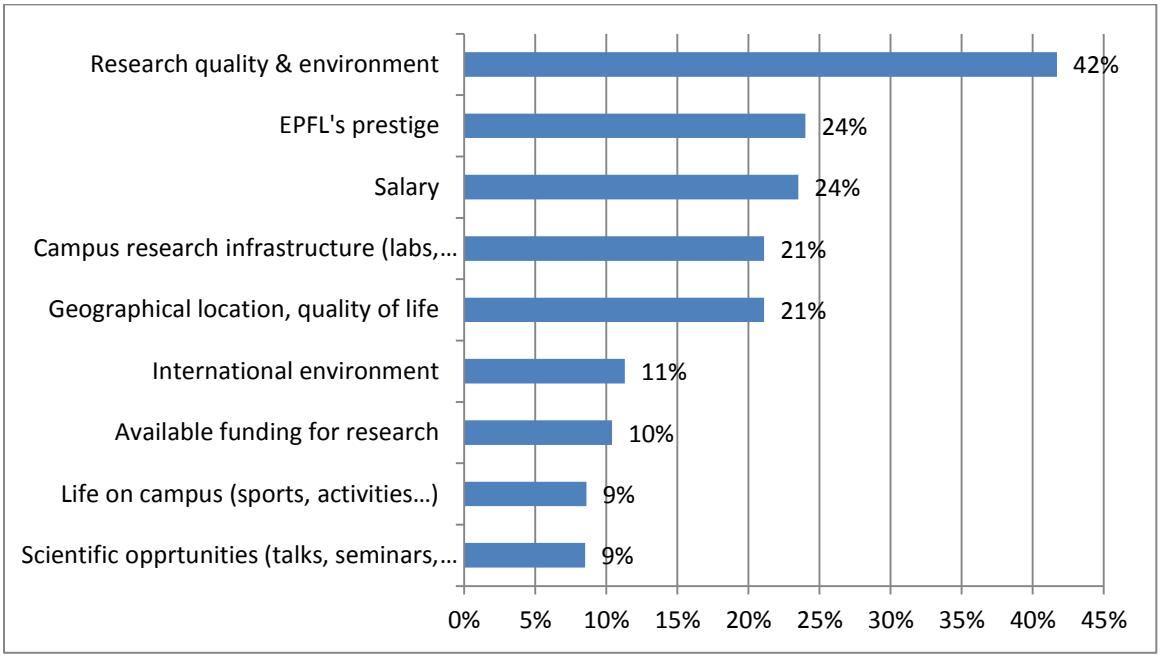
4.2 Positive and negative aspects of doing a PhD at EPFL

It is interesting to compare their answer to this closed question on their two most frequently cited reasons for choosing EPFL with their views as expressed on an open question as to the most positive aspects of doing a PhD at EPFL. There is a degree of correspondence between their responses to this open-ended question and their responses in the closed question, above. As in the closed question, the most frequently cited positive aspects of being at EPFL include the quality of the research happening here, the quality of the research environment, and the prestige of the school. Research infrastructure and the quality of the labs and resources for research are also identified as one of the most positive aspects of EPFL by 21% of respondents. Other positive factors, which are less linked to their research, include the salary (cited by 24% of respondents), and the quality of life in the Lausanne region (21%).

In general, there is less agreement as to the most negative aspects of doing a PhD at EPFL (Chart 9.2 – this has been set to the same scale as Chart 9.1 in order to allow for ease of comparison). Themes identified in Chart 9.2 will be picked up again throughout this report.

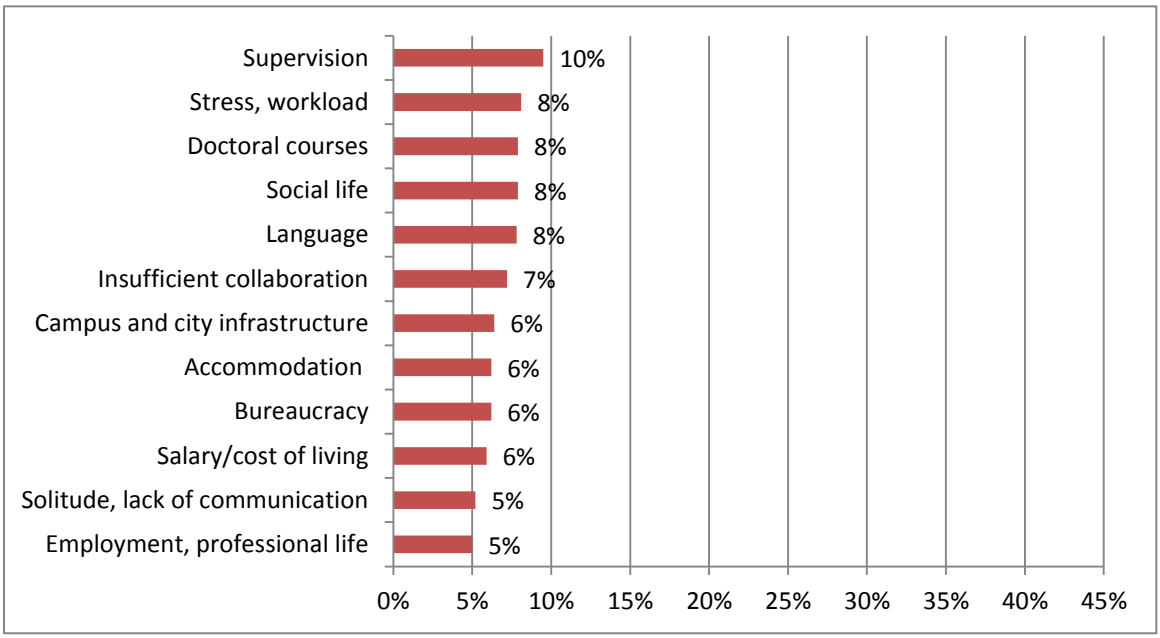
A selection of text responses to these two questions are included in appendix II.

Chart 9.1: What are the most positive aspects of doing a PhD at EPFL?



Note: Based on: Q.73: "What are the most positive aspects of doing a PhD at EPFL?"

Chart 9.2: What are the most negative aspects of doing a PhD at EPFL?



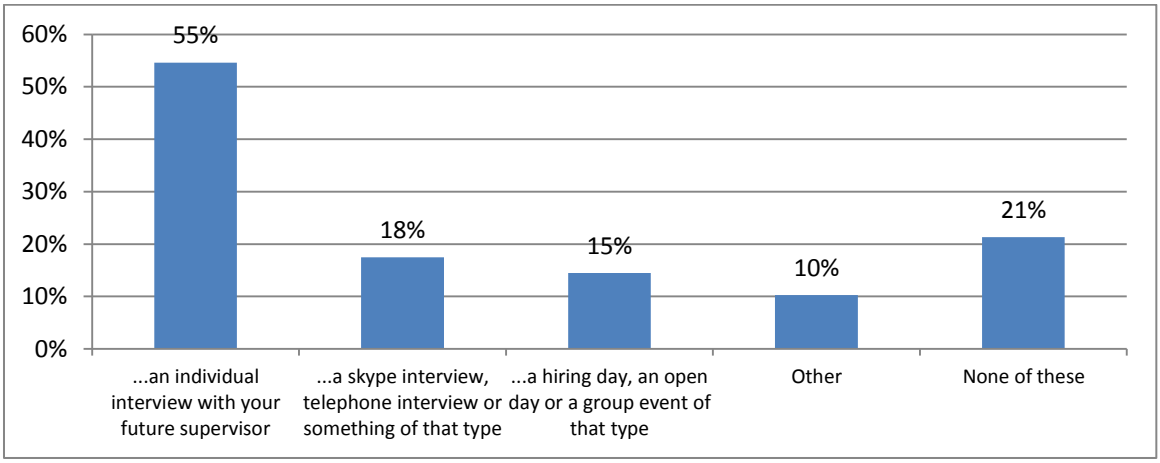
Note: Based on: Q.74: "What are the most negative aspects of doing a PhD at EPFL?"

4.3 Getting information before coming to EPFL

Almost 80% of respondents identified that they participated in some kind of interaction with EPFL (hiring day, face-to-face interview, Skype interview etc.) before coming (Chart 10). An individual interview was the most frequently cited form of interaction, followed by a tele-interview and a hiring event. For those who specified "other", this typically meant that (a) they knew their thesis director previously as she/he had taught them, (b) they had completed an internship in the lab, (c) they were interviewed but not by their future advisor or (d) they had exchanged emails. One-fifth (21%) said

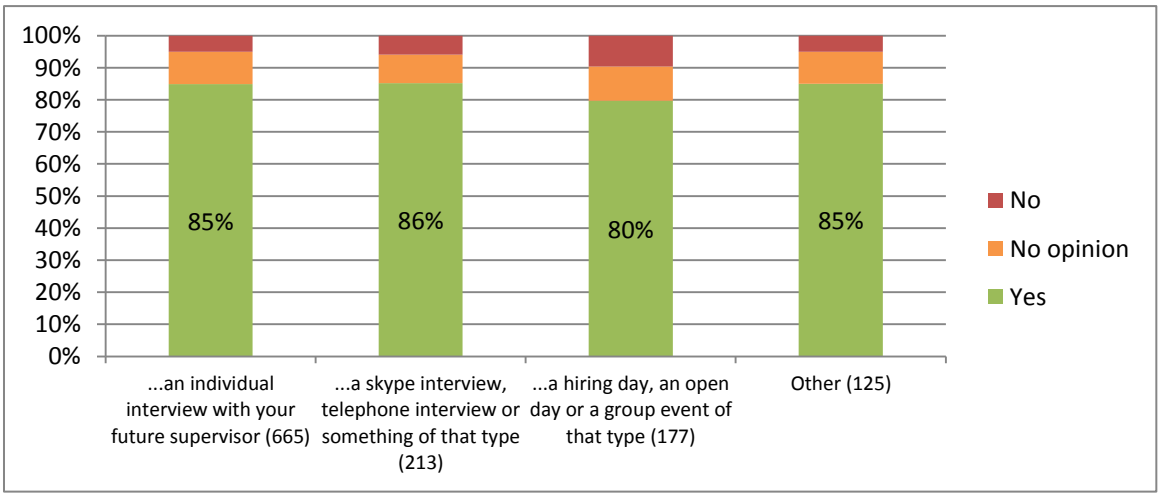
they had “none of these” forms of interaction before beginning at EPFL. For those who studied in EPFL before doctoral level the proportion specifying that they had “none of these” forms of interaction before beginning at EPFL rises to 35%. This may be because they were on-site and so were able to informally interact with a doctoral thesis director before commencing (and should perhaps have chosen the option “other”). However, for those who did not study at EPFL before doctoral level, 16% specified that they had “none of these” forms of interaction before beginning at EPFL (with a 95% confidence interval that would means that we might expect the figure citing for “none of these” in the population of those who had not previously studied at EPFL to be between 14% and 19%). Chart AA in the appendix provides a breakdown of those who specified “none of these” forms of interaction, by doctoral programme. For the vast majority of those who participated in such an event it was useful for them in coming to a decision (Chart 11). There is little difference in the reported utility of one sort of event over another.

Chart 10: Did you participate in one of the following events before starting at EPFL (all answers)?



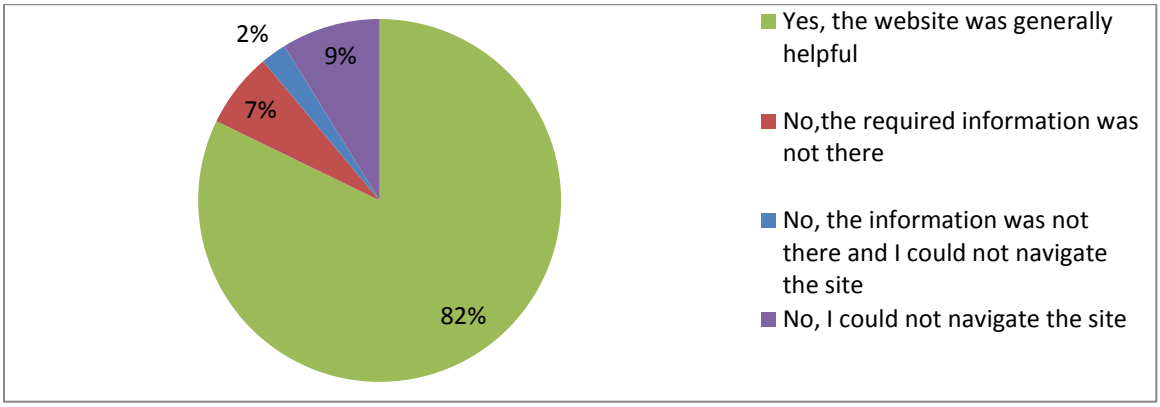
Note: Based on: Q. 8, “Before you started at EPFL did you participate in: A hiring day, open day or similar group event?; A one-on-one interview with your future advisor?; An interview via Skype, phone or similar?; Other (please specify); None of the above”. Respondents could select multiple answers so totals add up to more than 100%.

Chart 11: Was this interaction useful to you in your decision to choose EPFL?



Note: Based on: Q. 8, “Before you started at EPFL did you participate in…”, and on Q. 9: “Was this interaction helpful for you in making your decision to choose EPFL?”

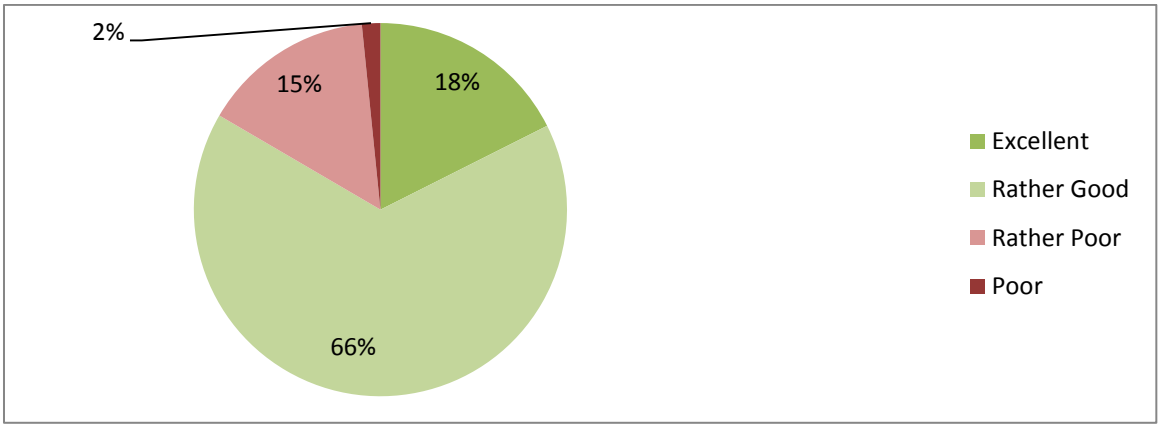
Chart 12.1: Did the website help you to find information about doctoral studies at EPFL?



Note: Based on: Q. 6: "How helpful was the EPFL website with regard to information about doctoral studies here? - I could access relevant information on the website".

Respondents also broadly found the website to be a useful source of information both specifically with respect to doctoral studies (82 % in Chart 12.1) and more generally as a source of administrative information (84% describing it as excellent or pretty good - Chart 12.2). This compares positively to 2005 when only two-thirds reported using the website to find information about doctoral studies and most of those complained about the complexity of navigation or the lack of crucial information. By comparison, in 2012 four-fifths were positive about the website with less than one-fifth highlighting difficulties with navigating the website or with availability of required information. Still, the 95% confidence interval with respect to this 18% of respondents who identified problems would lead us to conclude that between 309 and 391 doctoral students in the broader population have experienced some difficulties with accessing information about doctoral studies on the website.

Chart 12.2: How do you rate the availability of general administrative information on the EPFL website?



Note: Based on: Q. 21 "Please rate the quality of the following: The availability of general administrative information on the EPFL website".

5. Applying to and arriving at EPFL

5.1 Difficulties in the application process

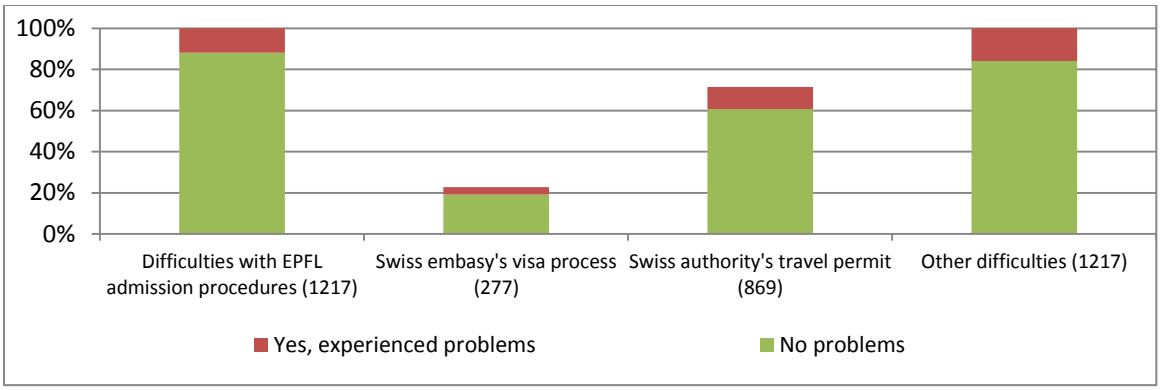
Most respondents had few difficulties when applying to EPFL. Almost nine-tenths (88%) had no difficulty with the EPFL application process (Chart 13.1). Of those who identified problems with the EPFL admission procedure, they cited difficulties such as being asked for documents which they felt were unrealistic (originals of official documents, for example), having documents or application materials lost or misplaced by EPFL administration, or what they felt were long delays in having the process finally completed (Chart 13.2).

Procedures managed by the Swiss authorities were deemed to be problematic by a slightly higher proportion of concerned respondents. Forty-nine respondents (only 4% of the total respondents but 17% of those who saw the question as relevant to them) identified they had problems with the visa process managed by the Swiss embassy. The most common problem related to the length of time it took to process the visa, meaning that the arrival in EPFL had, in some cases, to be postponed.

A total of 129 respondents (10% of the total but 15% of those who saw the question as relevant to them) identified problems with the travel permit system managed by Swiss authorities. Again, for three-quarters of those who specified the problem it related to the length of time it took to complete the process.

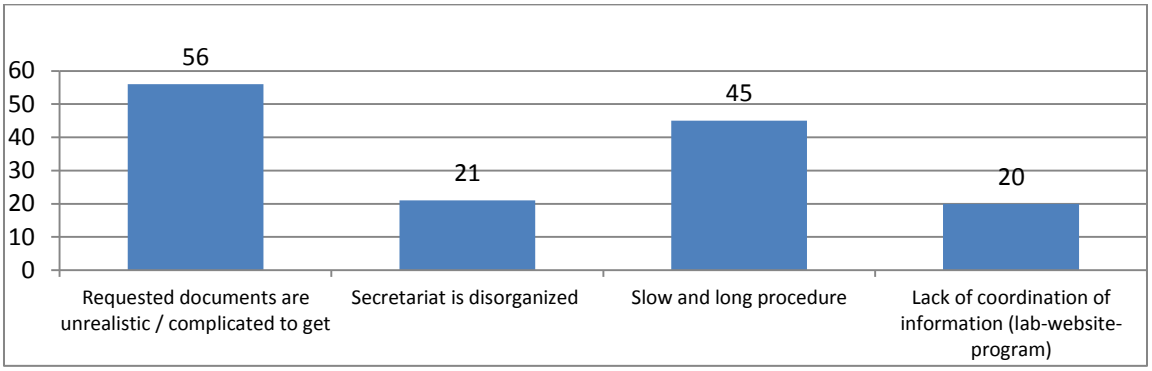
"Other" difficulties in applying to and arriving at EPFL were identified by 16% of respondents. For almost half of this group (90 respondents in total) the "other problems" related to difficulties in finding accommodation.

Chart 13.1: Did you experience difficulties during the enrolment process?



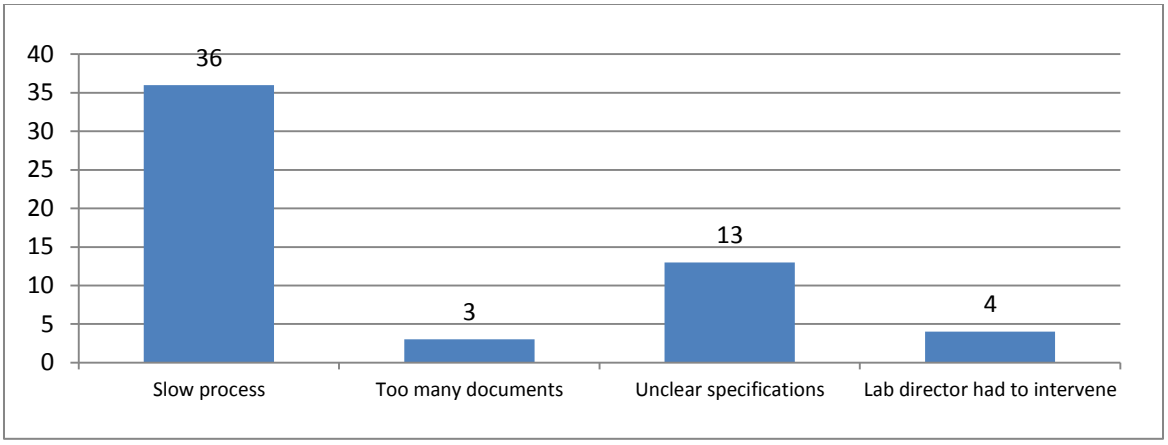
Note: Based on Q. 14, 15, 16, and 17: "During the enrolment process, did you encounter difficulties with: The application and admission process managed by EPFL; The visa application process managed by the Swiss Embassy; The work permit process managed by the Swiss authorities; Other issues related to starting your PhD at EPFL". The number of respondents per question is given in brackets because some cases the question was not relevant to some respondents. The "No" responses are shaded green, as they indicate a positive experience (i.e., no problems).

Chart 13.2 Analysis of 144 respondent comments on difficulties with EPFL admission procedure



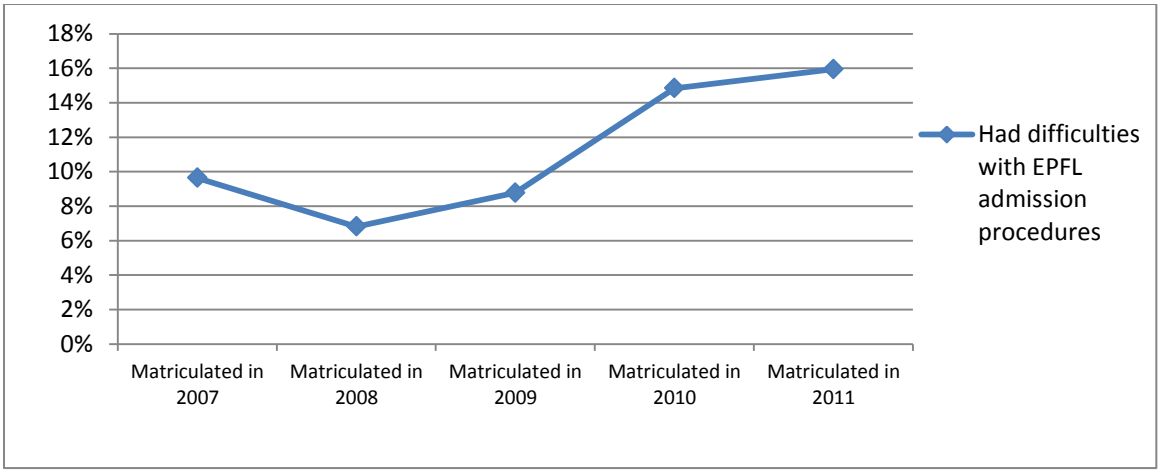
Note: Based on Q. 14: "During the enrolment process, did you encounter difficulties with: The application and admission process managed by EPFL".

Chart 13.3 Analysis of 44 respondent comments on Swiss embassy visa procedure



Based on Q. 15: "During the enrolment process, did you encounter difficulties with: The visa application process managed by the Swiss Embassy"

Chart 14: Did you experience difficulties with the EPFL admission procedures, by year of matriculation?

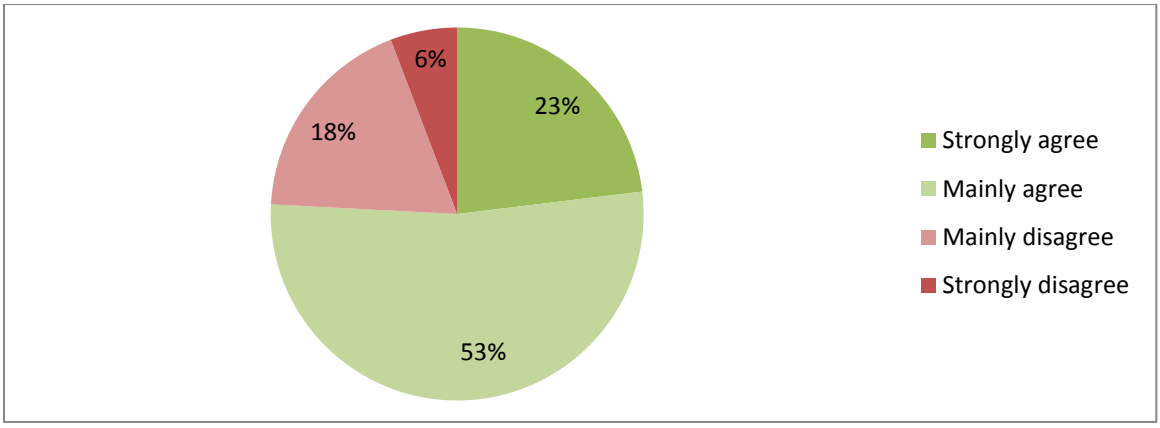


Note: Based on Q. 14: "During the enrolment process, did you encounter difficulties with: The application and admission process managed by EPFL" and on data from IS Academia. 18 respondents that had registered in 2006 or before were removed for analysis purposes.

When looking only at those who were based in a research institute (rather than on EPFL campus) the percentage that had difficulties with EPFL admission procedures rises from under 12% to 23% (relationship is significant with $p<0.001$ using a chi-square). There were also differences in the likelihood of having experienced difficulties with the EPFL admission procedures dependent upon year of admission, with more recently admitted respondents being more likely to have experienced difficulties (Chart 14). Again, if a chi-square is used for analysis, the relationship between year of matriculation and having experienced difficulties with EPFL admission procedures would be found to be significant ($p = 0.003$). There were also differences between doctoral programmes in the rate of difficulties experienced (see appendix, Chart C).

As can be seen from Chart 15, three-quarters (76%) either strongly or mainly agreed that they receive clear and complete information from Human Resources about their employment conditions (note that the statement is phrased in the present tense – "receive" – and so relates to their experience in general rather than at the time of their arrival). Those who originate in the Americas are more likely to identify that they do not receive clear and complete information from Human Resources (35% of those who originate in the Americas as compared to 24% of the total). This relationship was found to be significant, using chi-square ($p=0.023$). There are also differences, depending on the programme upon which the respondent is registered (see appendix, Chart Q).

Chart 15: Agreement with the statement, "I receive clear and complete information from Human Resources with regard to my employment conditions."



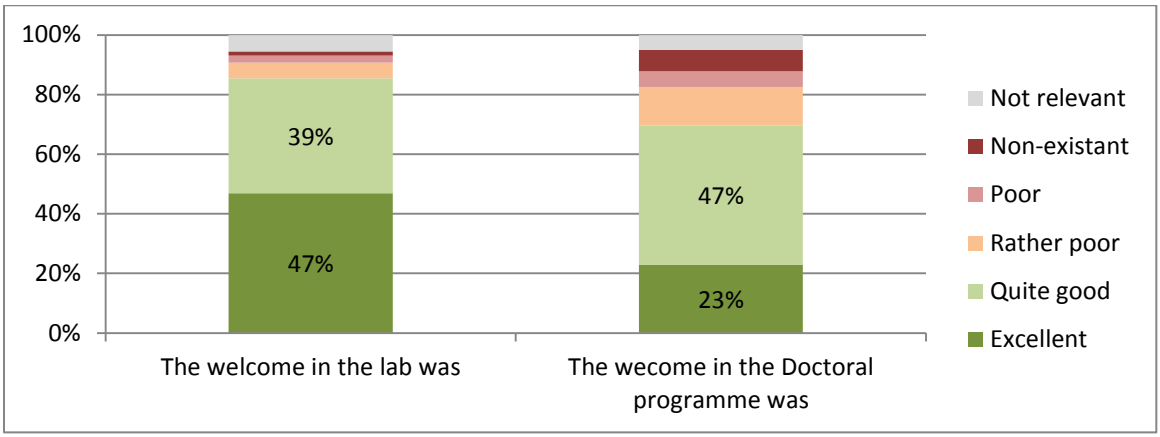
Note: Based on Q. 41: "To what extent do you agree with the following statement: I receive clear and complete information from Human Resources with regard to my employment conditions?"

5.2 The welcome they received

Almost nine-tenths of respondents (86%) identified that the welcome they received in their lab was either excellent or pretty good. In 2005 the comparable figure was also 86%, with 49% answering that the welcome was excellent – to all intents and purposes identical to the figures found in the 2012 survey. The percentage of those indicating that their welcome in their doctoral programme was excellent or pretty good was 70% (between 68% and 72%, with a 95% confidence interval). It is best to be careful when comparing the response to this question to the response for 2005, since it appears than in 2005 a number of respondents who were not in a doctoral programme answered the question. While the general figure for all respondents in 2005 was 69% satisfaction, perhaps the most comparable figure from the 2005 survey would be the welcome received in the doctoral programme by those who were in a doctoral programme – this figure was 79%. Given the relevant

confidence intervals it would be reasonable to suggest that satisfaction of those in a doctoral programme as to the welcome in that programme has dropped a little since 2005.

Chart 16: How good was the welcome received?



Note: Based on Q. 10 and 11: "How were your first days at EPFL?: The welcome I received from the lab I joined was…" and "The welcome I received from the doctoral programme was…"

There were no discernible patterns in the responses to these questions based on the respondent's sex, whether they were on the campus or off campus in an enterprise or research institute, on the year of their registration, or on their place of origin. There were some differences depending on their doctoral programme (see appendix, Chart D) but the pattern is of the majority of respondents across all programmes being happy with the welcome received.

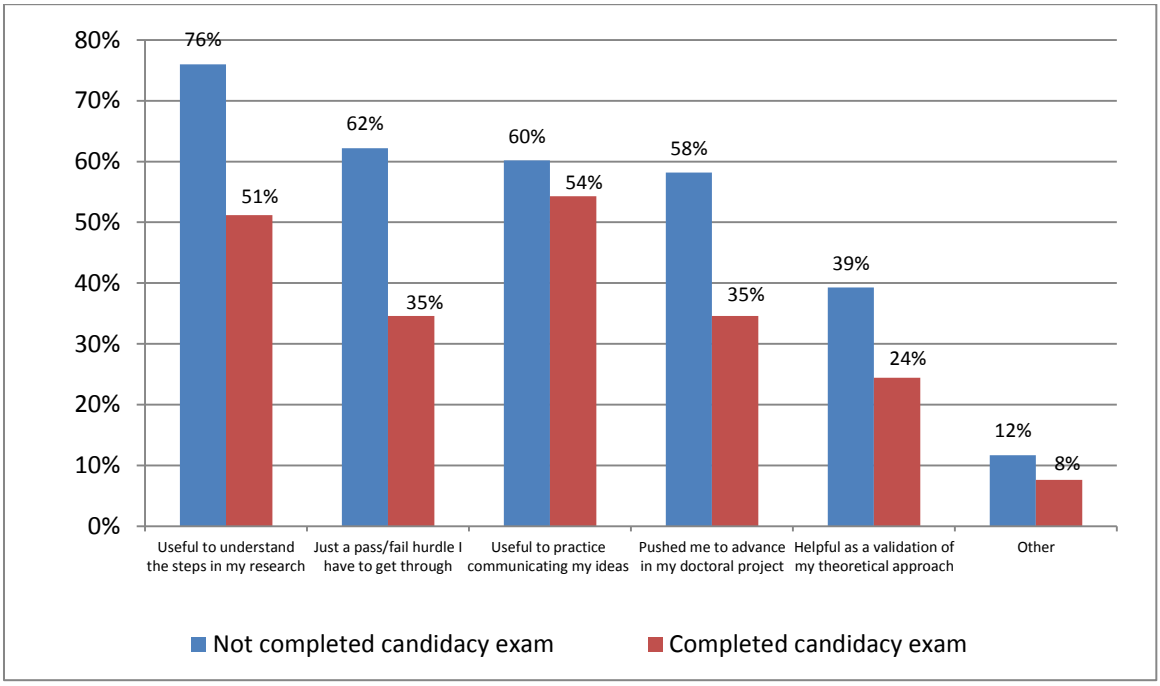
One-third of respondents (33%) attended a welcome day/welcome week[2]. Of those, 70% found it useful to gain information, and half (51%) found it useful to get to know other people. Only 14% of those who attended did not find it useful for one or the other. Those who attended a welcome day/welcome week were more likely to describe their welcome in their doctoral programme as either excellent or pretty good (82%) when compared to those who did not attend such an event (69%) ($p < 0.001$), but were no more likely to describe their welcome in the lab as good or excellent. This seems to be an endorsement of the welcome day/week events.

5.3 Candidacy exam

Having arrived in EPFL the doctoral students complete a candidacy exam at the end of their first year. Respondents were asked how they saw the candidacy exam process, with the question being phrased in a different tense but in otherwise comparable ways for those who had already completed and those who had not yet completed the process. There are considerable differences between how the two groups see the candidacy exam process.

[2] Based on Q. 12 " I attended a Welcome Day / Welcome Week: Yes/No"

Chart 17: How respondents view the candidacy exam process



Note: Based on Q. 54: "How do/did you perceive the candidacy exam?: It's just a pass/fail hurdle I have to get through; It will be useful to help me understand the various steps involved in my research; It will help me practice communicating my ideas (oral presentations, written proposals); It will be helpful as a validation of my theoretical approach; It will push me to advance in my doctoral project; other [specify]?:

- Those who have not yet completed the exam see some intrinsic value in the process as one which helps them to "understand the various steps involved in my research" (76%), and to "practice … communicating my ideas (oral presentations, written proposals)" (60%). They also saw it as pushing them to advance their doctoral project (58%). However almost two-thirds (62%) also said they saw it as "nothing but a pass/fail hurdle to get through".
- For those who have completed their confirmation already, the intrinsic value of helping them to "understand the various steps involved in my research" (51%) and of practicing "communicating my ideas (oral presentations, written proposals)" (54%) has declined but remains relatively strong (it may be that having developed these capacities they now take them for granted to some degree, or that they still identify a need for further self-development in these areas). The percentage who identify it as pushing them to advance their doctoral project also declines by more than 20% (35% cite this). The percentage that see it as "nothing but a pass/fail hurdle to get through" drops from almost two-thirds to one-third (35%).

Since we are dealing here with smaller subsets of the sample, the confidence intervals are wider than in the case of the sample as a whole. Table 1 below gives the 95% confidence intervals for a number of the possible responses to this question. These indicate that one could be reasonably certain that the patterns evident in the chart represent real differences in the broader population.

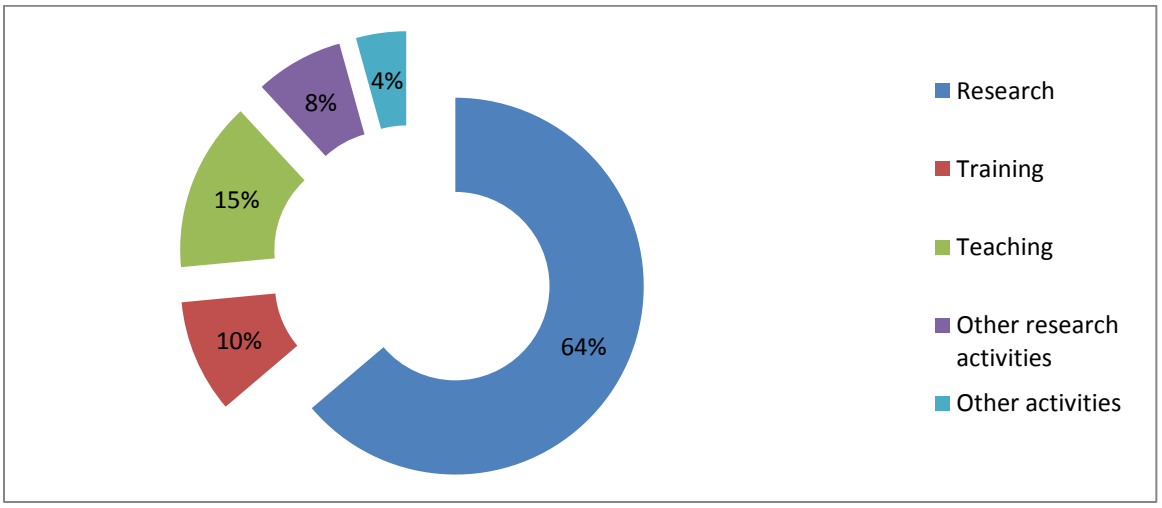
Table 1: Confidence intervals for some responses to the question on candidacy exam

	Range for 95% Confidence Interval	
	Not completed candidacy exam (314 respondents)	Completed candidacy exam (691 respondents)
Useful to help me understand the various steps involved in my research	71% to 81%	47% to 57%
It's just a pass/fail hurdle I have to get through	57% to 68%	31% to 39%
Pushed me to advance my doctoral project	53% to 64%	31% to 39%
Helpful as a validation of my theoretical approach	34% to 44%	21% to 27%

6. The work of the doctoral student

6.1 Average workloads

Chart 18.1: Average distribution of work in an average week in the last semester



Note: Based on Q. 38: "During an average working week in the last semester, what was the distribution of your working hours?: doctoral research (including hardware setup, data analysis, reading/writing papers, attending conferences, etc.), my own training (participation in doctoral courses and related homework, other coursework); teaching activities (teaching exercises or lab sessions, correcting exams, supervising students' semester or diploma projects, etc.); other research activities (related to the lab but not directly to my PhD); other (service duties for my lab)". 293 respondents not included.

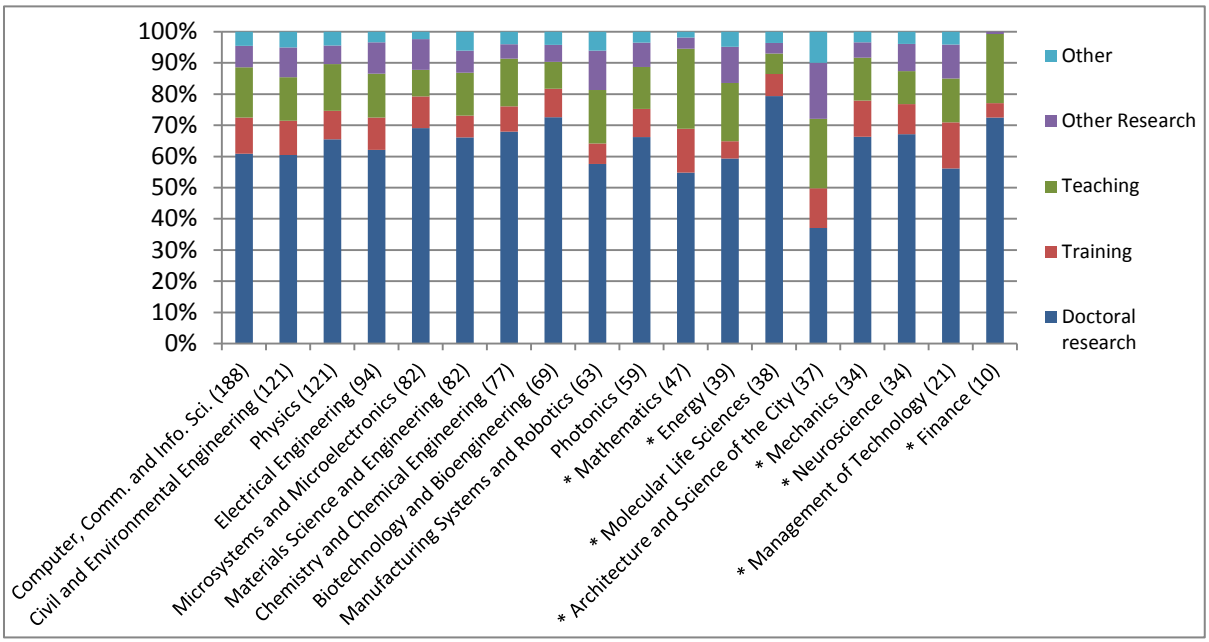
Respondents were asked what the distribution of their work in an average week in the previous semester was. It should be noted that this question was only open to those that had indicated that they did some teaching. This means that 24% of the respondents (293 respondents in total) who indicated that they did not do any teaching were not asked these questions.

The average figure for time spent on doctoral research was 64% of their time (the question did not specify the length of the working week or whether weekends or nights were to be included, so for some this may have been 64% of 42 hours while for others it may have been 64% of 70 hours). The same question was asked in the same way in 2005 and so comparisons are possible. The comparable figure for time worked on doctoral research in the 2005 survey was 59%. A one-sample t-test suggests that the difference between the average of 64% of time found in the 2012 survey and a reference figure of 59% is significant at the $p<0.001$ level. In 2005 the percentage of time devoted to their own training by those who were in a doctoral programme was 15%. In 2012 this was 10%. Again this difference is significant at the $p<.001$ level. Finally, in 2005 the average percentage of time teaching was 12%, as compared to 15% in 2012. Again, this difference is significant at the $p<0.001$ level. In summary:

- Average time spent on doctoral research in 2012 is greater than the 59% reported in 2005
- Average time spent on training is less than the 15% reported in 2005
- Average time spent on teaching is greater than the 12% reported in 2005

There are differences in the percentage of time spent on different activities dependent upon year of registration (see appendix, Chart P), and doctoral programme (Chart 18.2).

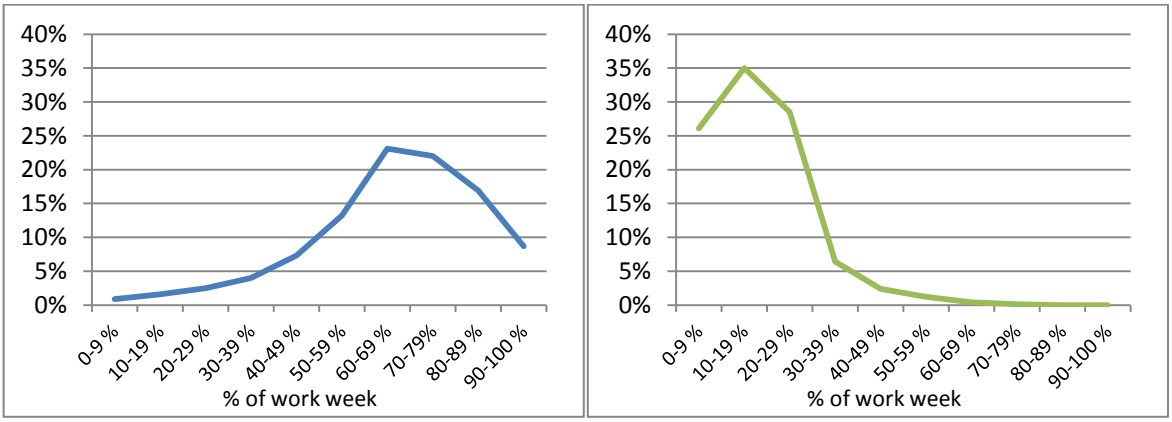
Chart 18.2: Average % of time spent on different tasks in an average working week last semester, by Doctoral programme (including only respondents who did teaching)



Note: The question was answered by 924 respondents who reported participating in teaching. As such it over represents the actual percentage of time spent teaching, since those who do no teaching are excluded. Should be read in conjunction with charts 18.5 and 18.6

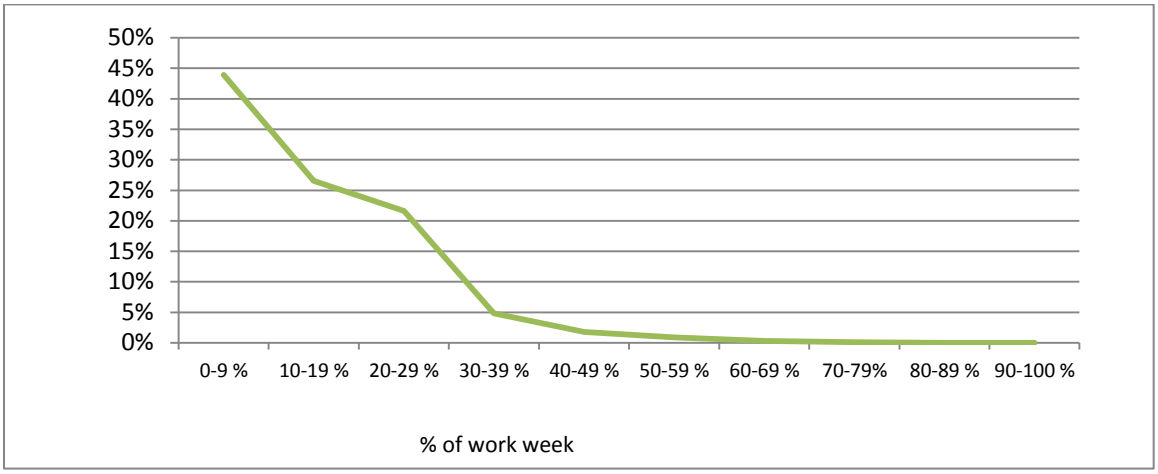
These average figures can hide a wide variation in experiences as can be seen in Charts 18.2-18.6. As Chart 18.3 shows, while as many as 9% report spending 90% to 100% of their time on their doctoral research, at the other extreme, 9% report spending less than 40% of their time on their doctoral research. There is a similarly wide variation in the percentage of time spent teaching (this wide variation is evident from the long tail in either direction on the distributions shown in Chart 18.3 and 18.4). Chart 18.4 reflects the fact that, in addition to those included in Charts 18.1 to 18.3, a further 24% indicated that they did not do any teaching at all. This means that the variation in teaching loads is much greater than that represented on charts 18.3.

Chart 18.3: Distribution of percentage of time spent on doctoral research (blue) and teaching (green) in an average working week in the last semester (including only respondents who did teaching)



Note: The number of respondents (i.e., 100%) in both cases is 924, with no responses available from 293 respondents who had indicated that they did not teach.

Chart 18.4: Distribution of percentage of time spent on teaching in an average working week in the last semester including all respondents



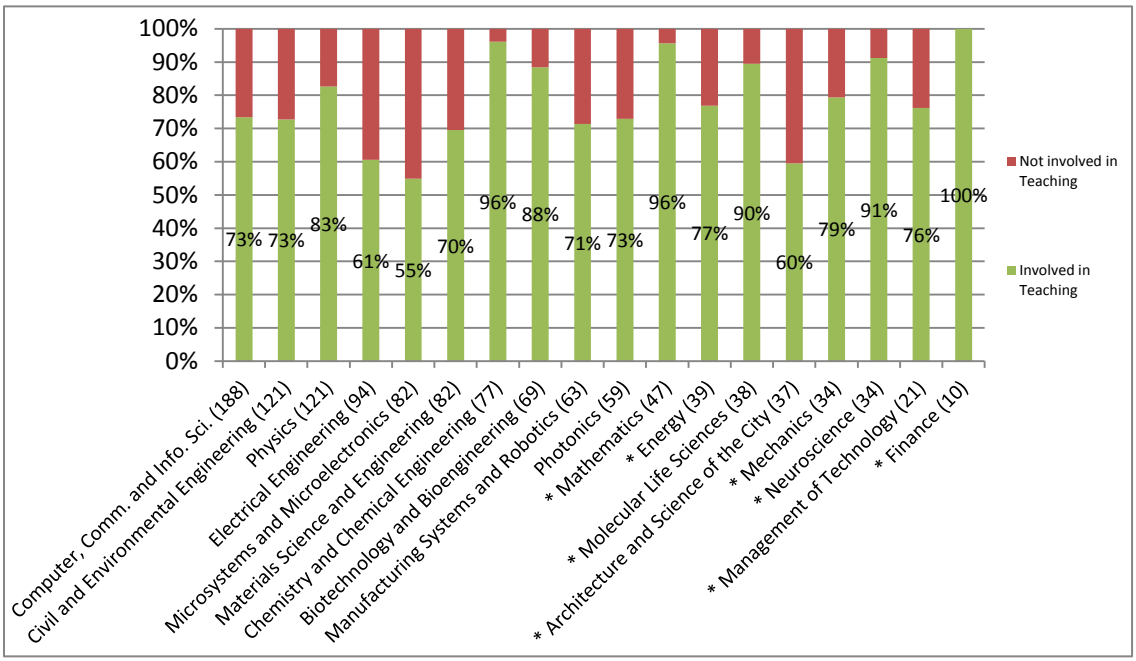
Note: The number of respondents (i.e., 100%) is 1,217. 24.1% who indicated they did not teach added to those who indicated they spent 0% of their time in an average working week teaching last semester.

All this means that we should be careful not to read too much into the overall figures presented in 18.1 – many doctoral students workload distribution will look nothing like the average distribution described in Chart 18.1. Some will have far less time teaching (and consequently a greater percentage of their time on other areas).

Although their experience of teaching will be dealt with below (Chapter 8), teaching – as it relates to their overall workload – does require some further exploration at this point in this report. There are differences between doctoral programmes as to whether or not the respondents identified that they were involved in teaching[3]. These are shown in Chart 18.5 and 18.6. Chart 18.5 shows the relationship between the doctoral programme and a respondent indicating that they were not involved in teaching at all. Chart 18.6 shows the relationship between the doctoral programme and a respondent indicating that they spent 0% of their time in an average week last semester involved in teaching activities (defined in the question as including "teaching exercises or lab sessions, correcting exams, supervising students' semester or diploma projects, etc."). The percentages involved in teaching in the last semester range from a low of 37% to a high of 96%.

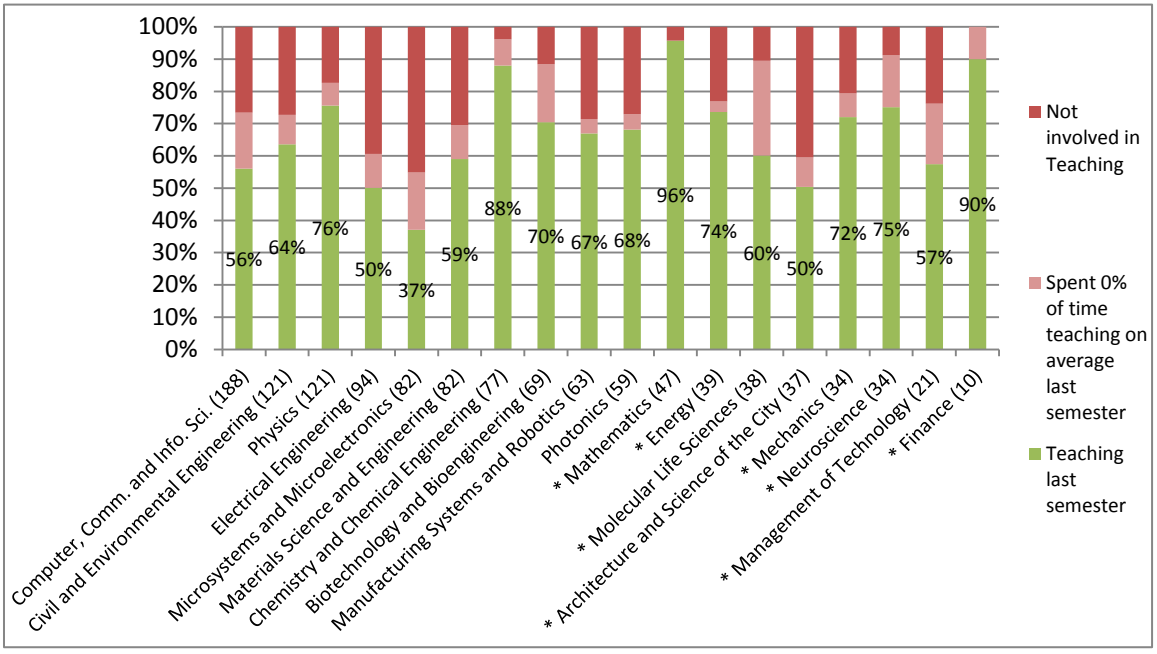
[3] For calculating statistical significance of association between doctoral programme and any given variable, smaller programmes (marked with an asterisk) have been excluded from the analysis.

Chart 18.5: Involvement in teaching activity, by Doctoral programme



Note: Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account in calculating significance.

Chart 18.6: Involvement in teaching activity last semester, by Doctoral programme



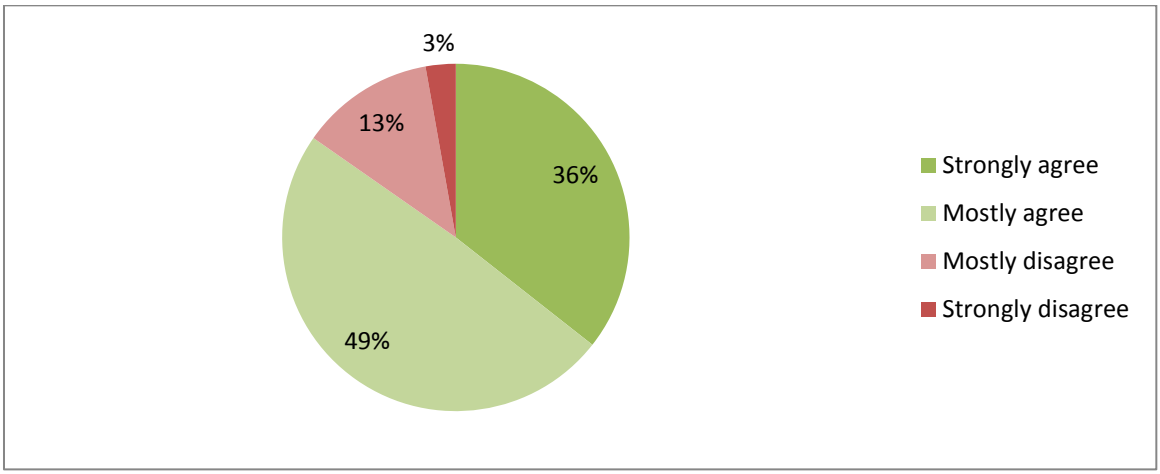
Since not all respondents are based on the EPFL campus, the breakdown of those who are based on campus that are teaching, per doctoral programme, is also provided (see appendix, Chart AC).

7. Quality of research supports provided

7.1 Overall satisfaction

When respondents were asked, in general, if they were satisfied with the conditions under which they were completing their research thesis, 85% either strongly or mostly agreed that they were satisfied. As noted above, the 95% confidence interval here suggests it would be very unlikely if the actual satisfaction rate in the broader population of doctoral students were lower than 83% or higher than 87%. The overall satisfaction rate in the 2005 survey, where the same question was asked, was 90%.

Chart 19.1: Agreement with the statement, "Overall I am satisfied with the conditions under which I am conducting my thesis research."

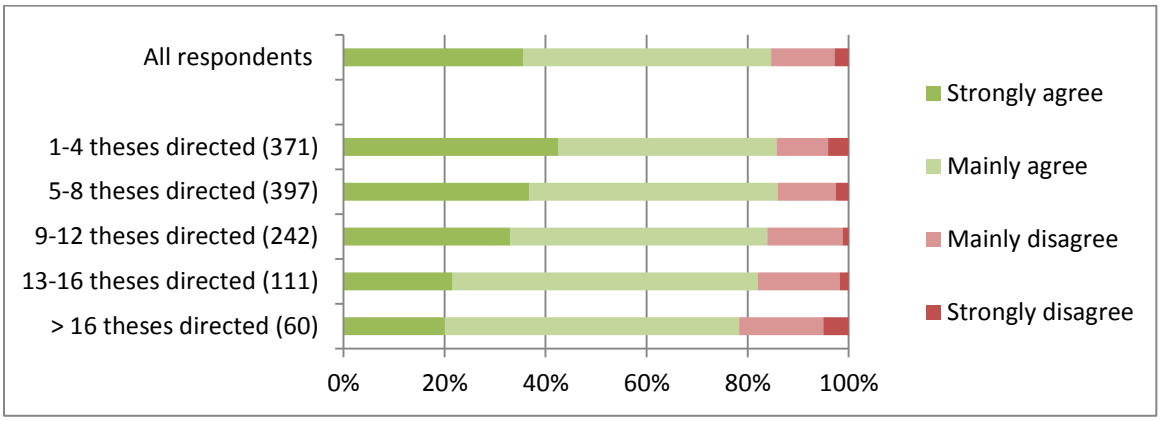


Note: Based on Q. 40: "To what extent do you agree with the following statement: 'Overall I am satisfied with the conditions under which I am conducting my thesis research'".

There are differences in responses depending on the number of doctoral students being directed by their thesis director[4], with chi-square showing that this difference is significant (p=0.001). In short, as the number of theses directed by a director goes up, the satisfaction of those directed goes down. While this relationship is clear and significant, it is not strong; in the region of 80% express satisfaction even where there the numbers supervised are larger. There are also differences in satisfaction with their conditions depending on the doctoral programme through these are not found to be statistically significant (Chart 19.3).

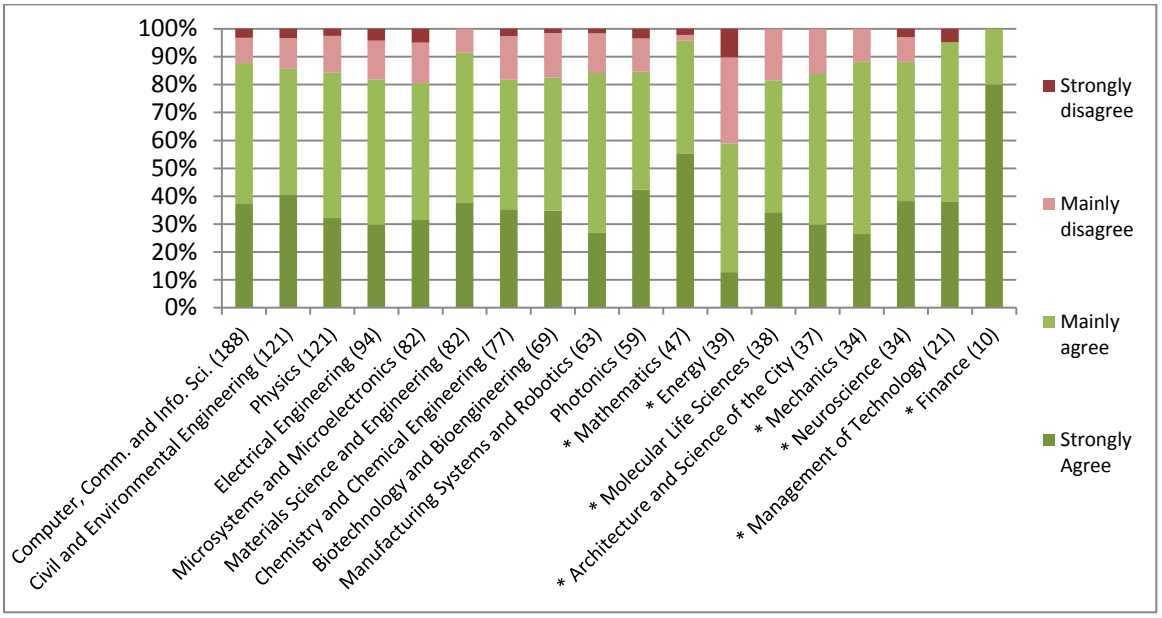
[4] Refers to number of doctoral students under sole direction. Data on the number of theses being directed by a thesis director was drawn from IS Academia.

Chart 19.2: Agreement with statement, "Overall I am satisfied with the conditions under which I am conducting my thesis research", classified by number of students supervised by doctoral director.



Note: Based on Q. 40: "To what extent do you agree with the following statement: 'Overall I am satisfied with the conditions under which I am conducting my thesis research'" and on data from IS Academia. 1181 respondents, the number of respondents is given in brackets.

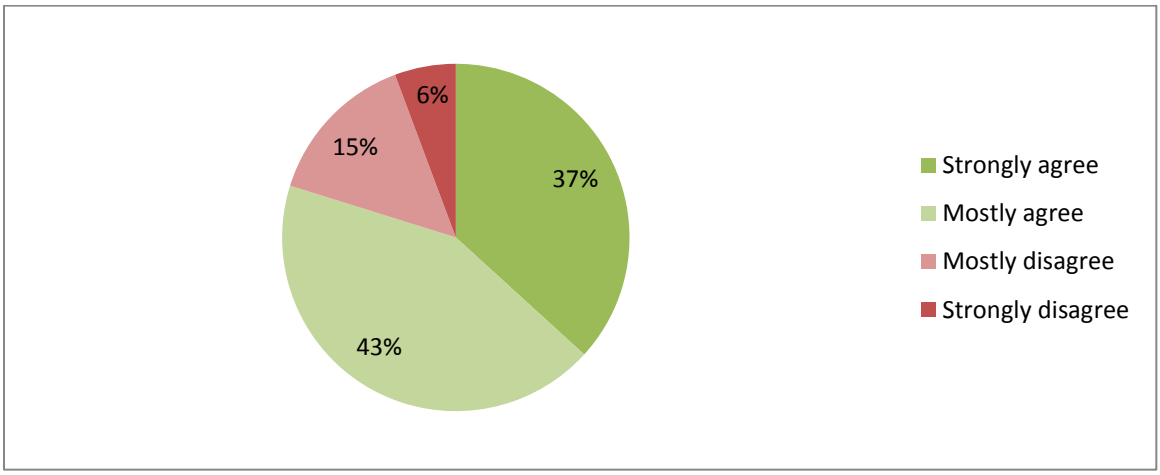
Chart 19.3: Agreement with statement, "Overall I am satisfied with the conditions under which I am conducting my thesis research", by Doctoral programme



Note: Association not found to be statistically significant. Only larger programmes – those not marked with an asterisk - are taken into account in calculating significance.

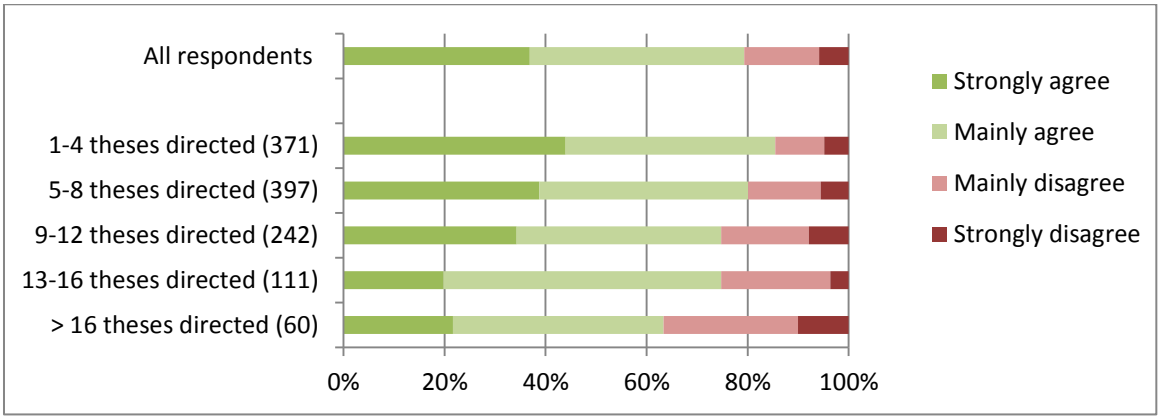
When asked if they agreed that there was a real spirit of dialogue between them and their thesis director, 80% either agreed or mostly agreed. The 95% confidence intervals here suggest an overall rate in the population of doctoral students as a whole of between 77% and 83%. Again, this is associated with the number of theses being directed by the doctoral thesis director (Chart 20.2). Again, this relationship is significant (p=0.001).

Chart 20.1: Agreement with the statement, “There’s a real spirit of listening and dialogue between me and my thesis director.”



Note: Based on Q. 39: “To what extent do you agree with the following statement: ‘There’s a real spirit of listening and dialogue between me and my thesis director’”.

Chart 20.2: Agreement with statement, “There’s a real spirit of listening and dialogue between me and my thesis director”, classified by number of students supervised by doctoral director



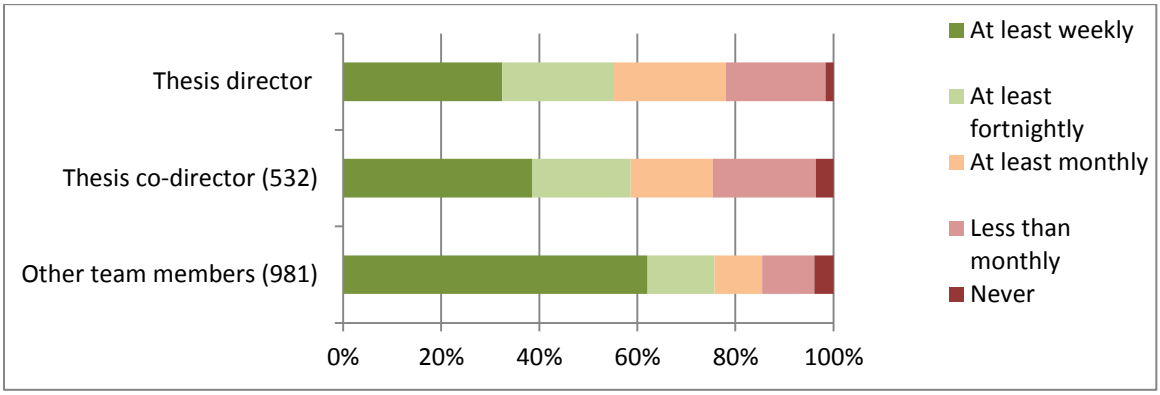
Note: Based on Q. 39: “To what extent do you agree with the following statement: ‘There’s a real spirit of listening and dialogue between me and my thesis director’” and data from IS Academia. Responses from 1181 respondents, the number of respondents is given in brackets.

7.2 Quality and frequency of scientific advice received

In 2005 respondents were asked about the quality of the scientific guidance they received. Three-quarters (73%) saw it as excellent or good. In 2012 this topic was addressed in more detail, through three related questions which were asked about meetings with thesis directors and other potential scientific advisors. They were:

- How often you meet that person?
- Do you meet them frequently enough?
- How do you rate the quality of their advice?

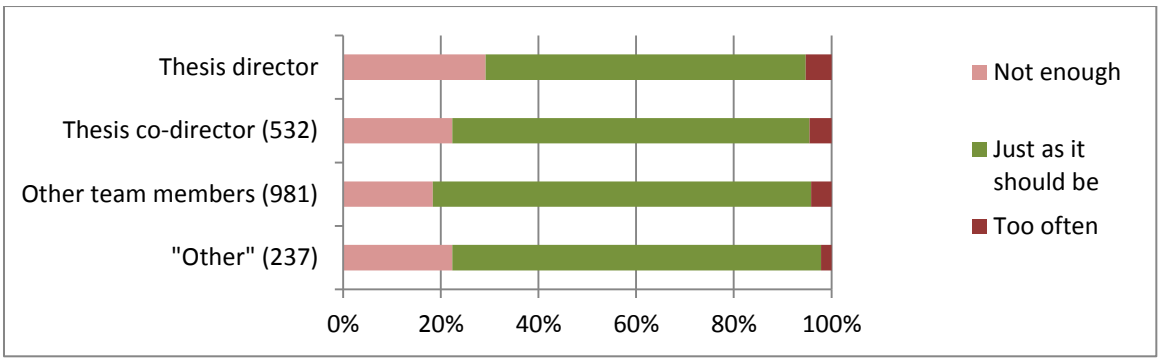
Chart 21: How often do you meet…



Note: Based on Q. 23, 24, and 25: "Please specify how often (on average) you meet with this person: Your thesis director; Your thesis co-director; Other staff members in your lab". The number of respondents is given in brackets in cases where the question was not deemed relevant by some respondents. The number of respondents for whom the question was declared to be not relevant were 685 (Thesis co-director), 236 (Other lab team members).

Over half of respondents (55%) meet their thesis director at least every two weeks and four-fifths (78%) meet their thesis director at least every month (Chart 21). In 2005 it was reported that almost a quarter of respondents met with their thesis advisor less than once a month. This is similar to what was found in 2012. Meetings with co-directors and with other staff members in the lab – where relevant – are more frequent, however there does appear to be some confusion as to what counts as a "co-director" and so the data with respect to co-directors should be treated with some caution (as is explained below).

Chart 22: How do you rate the frequency of scientific advice from…

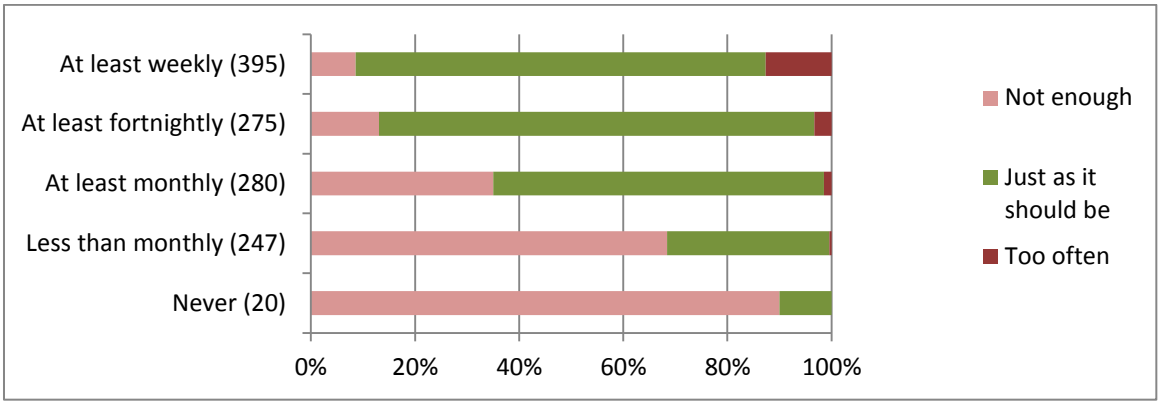


Note: Based on 23, 24, 25 and 26: "Please rate the frequency of scientific guidance you receive from: Your thesis director; Your thesis co-director; Other staff members in your lab; Other(s) [please specify who]." The number of respondents is given in brackets in cases where the question was not deemed relevant by some respondents. The number of respondents for whom the question was declared to be not relevant were 685 (Thesis co-director), 236 (Other lab team members), and 980 ("other").

The majority of respondents identify that they feel they meet their thesis director often enough (66% - Chart 22), while three-tenths (29%) identify that they feel they do not get advice from their thesis director frequently enough. Applying a 95% confidence interval would mean that at least 26% and perhaps as many as 32% of doctoral students in the wider population –between 508 and 622 doctoral students in terms of raw numbers – feel that they do not get scientific advice from their thesis director frequently enough. Fewer of the respondents say that they feel they do not get scientific advice frequently enough from a thesis co-director or from other staff members in the lab. It is not known whether this is because they get advice from these people more frequently or because they do not regard frequent advice from this person as being as important as advice from a thesis director. Over two hundred respondents also identified that, in addition to a thesis director, a

thesis co-director and other staff in the lab they get scientific advice from an "other". For 153 of these, the "other" person was someone in EPFL, either in their lab (in which case they probably should have selected "other staff members in your lab") or in a related area. For 32 it involved a person in another academic institution while for 12 it involved someone from industry.

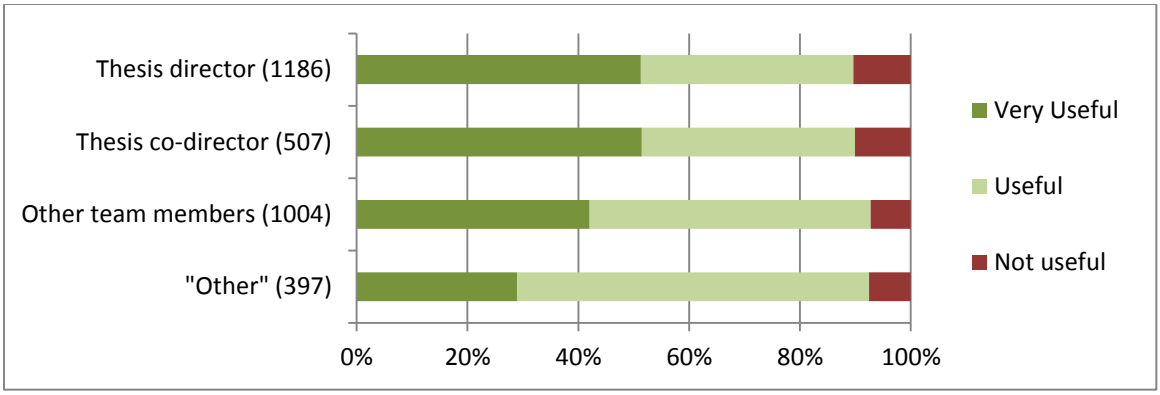
Chart 23: Respondents rating of the frequency of scientific advice from thesis director, by how often they actually meet the director.



Note: Based on Q. 23 ""Please specify how often (on average) you meet with this person: Your thesis director;" and "Please rate the frequency of scientific guidance you receive from: Your thesis director". The number of respondents is given in brackets.

The frequency of advice and the feeling of getting enough advice are highly related (Chart 23 – using a chi-square, $p<0.001$[5]). It could be argued, based on the data presented in chart 23, that – from the survey respondents' perspectives – meeting their thesis director at least fortnightly appears optimum. Of those who meet their director at least fortnightly, 84% say that they receive scientific advice as frequently as they should (as compared to 79% for those who meet weekly and 64% for those who meet monthly). However it is also evident that it is difficult to please all respondents: of those who meet their thesis director at least weekly, one-twelfth (9%) say that this is still not frequent enough.

Chart 24: How do you rate the usefulness of scientific advice from…



Note: Based on Q. 27, 28, 29 and 30 "Please rate the usefulness of the scientific guidance you receive from: Your thesis director; Your thesis co-director; Other staff members in your lab; Other [specify]." The number of respondents is given in brackets in cases where the question was not deemed relevant by some respondents. The number of respondents for whom the question was declared to be not relevant were 31 (Thesis director) 710 (Thesis co-director), 213 (Other lab team members), and 820 ("other")

As was noted above, in 2005, 73% saw the scientific guidance they received as excellent or good. In 2012, nine-tenths of respondents identified that the advice from their thesis director was useful or

[5] The small numbers replying "never" to Q.23 were excluded in order to allow the chi-square to be calculated.

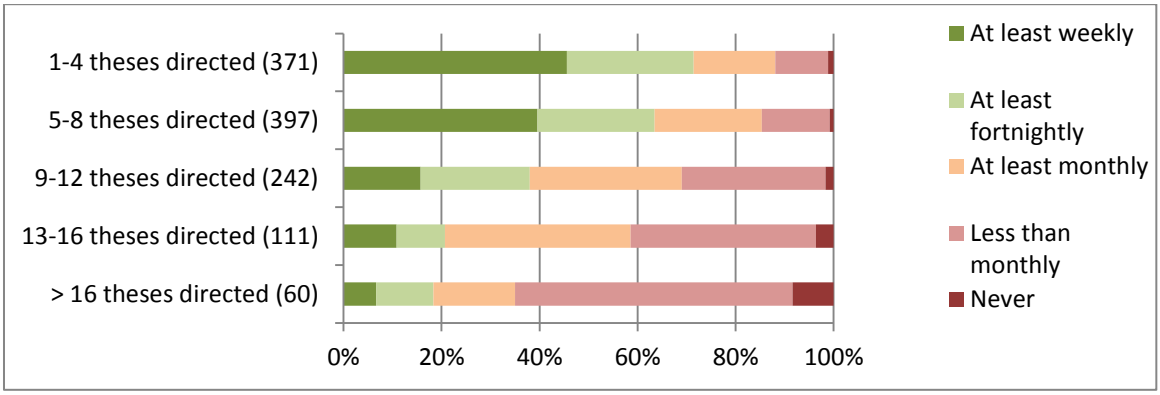
very useful (90% of respondents for whom the question was relevant) (Chart 24). This too is related to how often advice is given to them: 70% of those who met their thesis director weekly felt that the advice was "very useful", as compared to 26% for those who met their director less than once per month. This relationship is significant at the level of $p<0.001$.

It is interesting to note that those who are based in an enterprise or a research institute rather than on EPFL campus are less likely to meet their thesis director regularly (54% meet their director either less than once per month or never) ($p<0.001$). Despite this, they still feel they get scientific advice from their thesis director often enough (28% disagree with the view that they get scientific advice from their director often enough for those in an enterprise or a research institute as compared to 29% of those based on the EPFL campus). A small percentage of respondents (3%) identify that they work somewhere other than on the EPFL campus or in a research institute or in an enterprise. This is made up of those who work in multiple off-campus EPFL sites, in other universities or at home. This group are most likely to feel that they do not meet their thesis director frequently enough (41%). This data is included in this report because it raises some interesting questions; however, the numbers involved are so small here it would not be possible to draw too many conclusions from this group to a wider population.

There are also differences between doctoral programmes in respondent's answers to these questions (see appendix charts E, F and G) and depending on the status of their thesis director (appendix charts H and I). Interestingly, the frequency of meetings differs depending on the status of the thesis director, ($p<0.001$) with only 23% of those whose thesis is being directed by a full professor meeting them every week, as compared to 51% of those being directed by a Senior Scientist and 66% of those being directed by a PATT. Irrespective of the status of the director, the frequency of advice is associated with the quality of advice: For example, for those directed by full professors who they meet weekly, 76% see the advice as very useful. For those directed by full professors that they meet at least once a month the percentage rating advice as very useful falls to 44% and falls further to 24% where they meet their director less than once per month ($p<0.001$).

It is notable that many of those who are listed as 'without direction' (only 36 respondents in total) identify that they have frequent meetings with a thesis director. As identified above, these are respondents who have been admitted to a programme and are still in the process of finding a thesis director. Presumably they respond to the question in terms of the person from whom they are receiving advice at that time, rather than in terms of a formally assigned director. The situation with respect to thesis co-directors also appears a little confused insofar as some respondents answer questions regarding a co-director when they are not listed on IS Academia as having a co-director (for example, the number of respondents who are identified as having a co-director for their thesis is 363 [30%], however 456 [38%] identify that the advice they get from their co-director that is either useful or very useful). It may be that some respondents are unclear as to the specific meaning of co-director, and that this is reflected in this pattern of answers or that their official designation is not always matched with their lived experience of direction/co-direction.

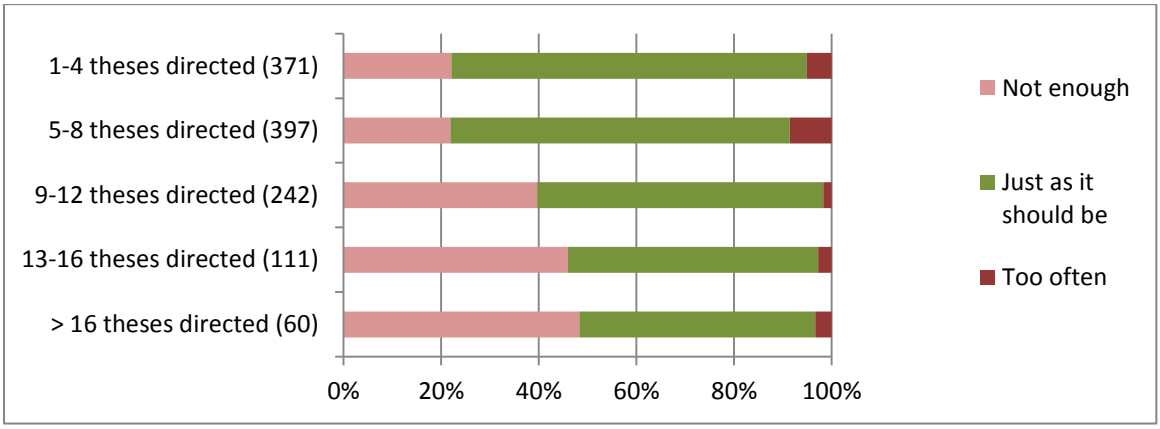
Chart 25: How often do you meet thesis director, classified by number of students supervised



Note: Based on Q. 23: "Please specify how often (on average) you meet with this person: Your thesis director" and on data from IS Academia. Cramer's V =0.212; p< 0.001.

One factor which is associated with the frequency and estimated utility of the scientific advice respondents get is the number of students being supervised by their thesis director. As numbers of dissertations supervised by the thesis director goes up, the frequency of meetings between the respondent and their director goes down, the proportion of respondents saying they do not get enough advice goes up, and their rating of the utility of the advice they receive goes down (Charts 25 – 27). In the case of all three questions, the relationship is significant at $p < 0.001$.

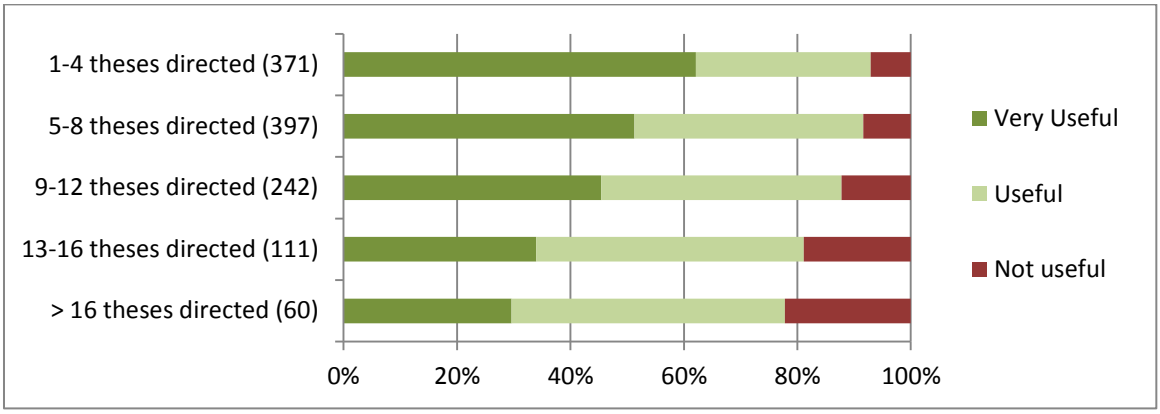
Chart 26: How do you rate the frequency of scientific advice from thesis director, classified by number of students supervised



Note:

Note: Based on Q. 23: "Please rate the frequency of scientific guidance you receive from: Your thesis director" and on data from IS Academia. Cramer's V =0.161; p<0.001.

Chart 27: How do you rate the utility of scientific advice from thesis director, classified by number of students supervised



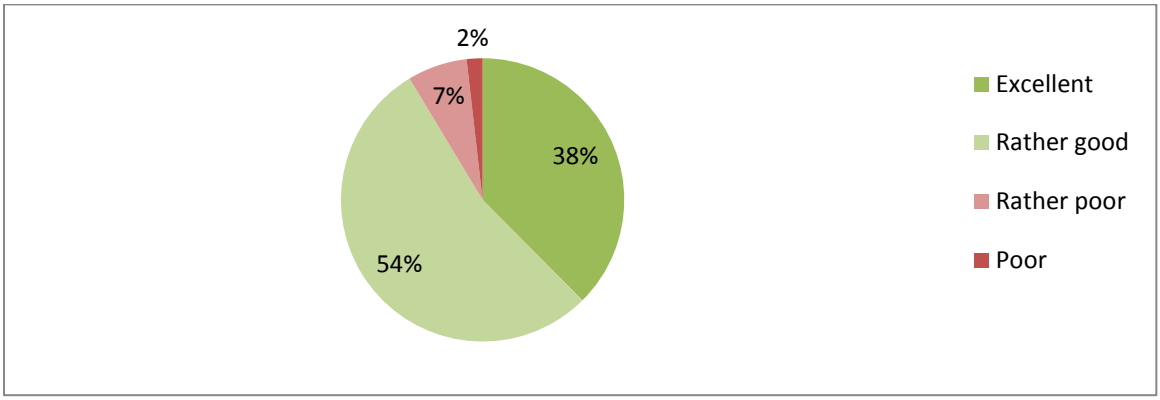
Note: Based on Q. 27 "Please rate the usefulness of the scientific guidance you receive from: Your thesis director" and on data from IS Academia. Cramer's V=0.133, p<0.001)

The frequency of meetings between the respondent and their doctoral supervisor does moderate, to some degree, the negative effect of a large number of theses being directed by the thesis director. However, the data does not support the view that, in cases where there are large teams of doctoral students supervised by a thesis director, the members of the team will get sufficient support from co-directors or from others. Respondents whose doctoral thesis director supervises larger numbers of students are not more likely to meet a co-director regularly when compared to those whose director supervises a smaller number of students. Nor are they more likely to meet other members of staff in their lab regularly. This is (again) associated with their rating of the frequency with which they receive scientific advice; respondents whose thesis director supervises a larger number of students are not more likely to indicate that they get advice frequently enough from other team members and from a co-director than those respondents whose thesis director supervises a smaller number of doctoral students (See Charts J to M in the appendix). More generally the association between number of theses directed and the estimated frequency and utility of meetings with a thesis director is not moderated by having a co-director: the pattern of responses for these questions is basically the same for those with a thesis co-director as for those without. This hold true irrespective of whether we use the formal IS Academia listing as to whether or not they have a co-director, or whether we use their own perception as to whether questions regarding co-direction are relevant to them.

7.3 Administrative support for studies and research

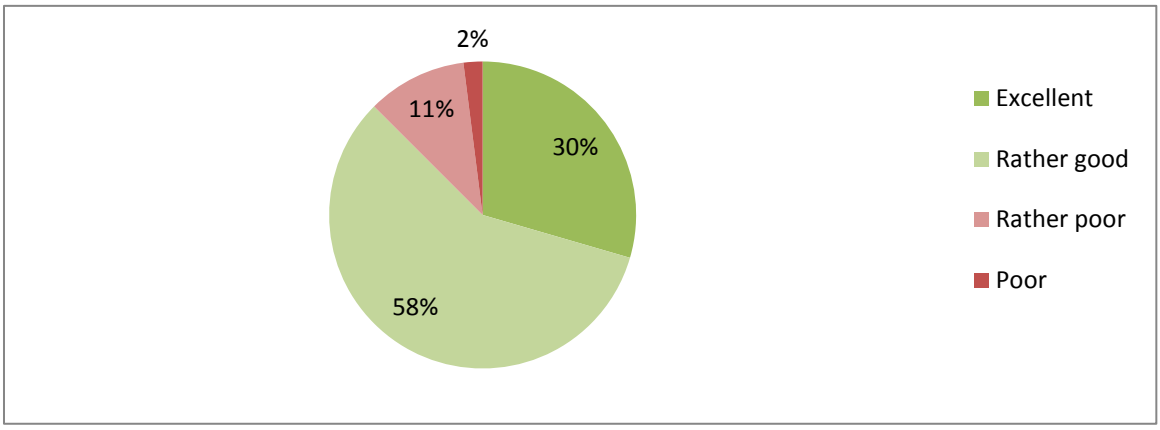
More than nine-tenths of respondents (91%) regard the administrative support they receive as either excellent or quite good. There are differences between the ratings of administrative support between different doctoral programmes (see Chart N in the appendix). Similarly 88% of those for whom the question was relevant identified that the ease with which they could speak English with administrative staff was either excellent or pretty good.

Chart 28.1: How do you rate the administrative support that you receive in your studies and research?



Note: Based on Q. 20: "Please rate the quality of the following: The administrative support you receive in your studies and research". The question did not specify whether the administrative support referred to was in the lab, in the doctoral programme, in the doctoral school or in EPFL in general. Therefore we cannot assume what administrative support their ratings refer to.

Chart 28.2: How do you rate the ease with which you can speak with administrative staff in English?



Note: Based on Q. 22: "Please rate the quality of the following: The ease with which you can speak with administrative staff in English". The question was answered by 200 respondents whose correspondence language is English. The same qualification entered with respect to Chart 28.1 applies here also.

8. Teaching activities

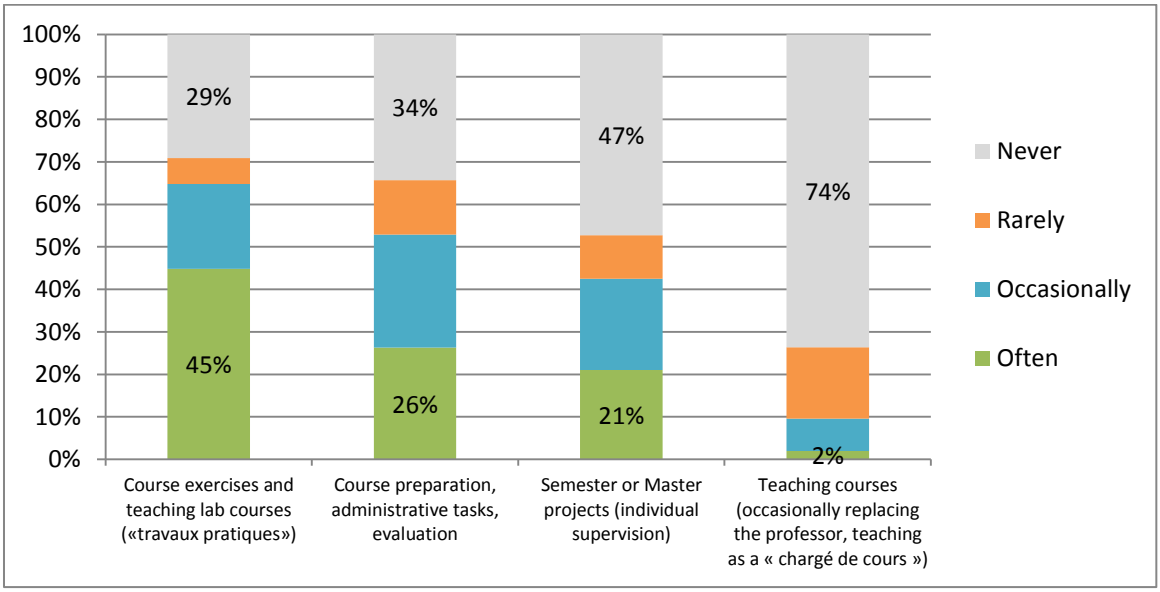
8.1 How much do they teach?

When asked questions related to their teaching experiences, respondents were given the option of choosing "I am not involved in teaching activities". As noted above in relation to Charts 18.1 to 18.6, one-quarter of respondents (24%) identified that they were not involved in teaching activities. This is slightly - but not significantly - up on the 22% who indicated that they were involved in no teaching activities when the same question was asked in 2005. As in 2005 this is associated with language issues. 86% of those whose mother tongue is French are involved in teaching, 81% of those whose mother tongue is English, 78% of both German and Spanish mother tongue speakers and 75% for Italian speakers. The percentage drops to 55% for those whose mother tongue is Farsi and to 53% for Chinese mother tongue speakers. This association is significant at the $p<0.001$ level.

As was noted in relation to Charts 18.1 and 18.2, in addition to the 24% who do no teaching, a further 9% identified that they did no teaching in an average week last semester. Adding these together we can say that, in an average week the last semester, 33% of respondents indicate they spent 0% of their time involved in teaching activities.

Chart 29 describes the teaching activities that respondents report being involved in. They are most often involved in teaching exercise classes and labs with 45% of respondents reporting engaging in such activity often. One-quarter, (26%) indicate that they often engage in course preparation, administrative tasks and evaluation, while one-fifth (21%) report often providing individual supervision to master or semester projects. On the other hand three-quarters (74%) report never giving occasional lectures or acting as a «chargé de cours», with a further 17% reporting doing so only rarely.

Chart 29: How often are you engaged in a range of types of teaching activity?



Respondents are less likely to be involved in teaching activity if:

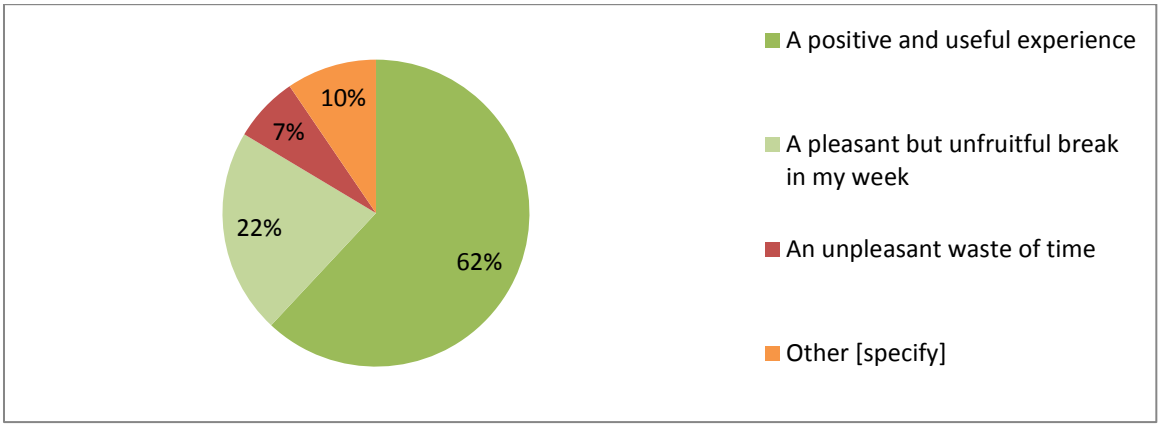
- their doctoral thesis director is supervising a large number of researchers (79% are involved in teaching where the director has 1-4 doctoral students as compared to 52% where the director has more than 16 supervisees) (chi square shows significance at $p<0.001$)
- they are listed as being "without direction" (31% of those listed as "without direction" report being involved in teaching as compared to 80% of those whose director is a PATT and 76% for the respondents as a whole) (chi square shows significance at $p<0.001$)
- they registered in the last year (58% of those who registered in 2011 report being involved in teaching, this rises to 86% for those who registered in 2008) (chi square shows significance at $p<0.001$)
- they are registered in particular doctoral programmes (for example, 55% of those in Microsystems and Microelectronics report being involved in teaching, as compared to 96% of those in Chemistry and Chemical Engineering – see chart 18.5 and 18.6, above).

8.2 Their experience of teaching

Respondents were, broadly speaking, positive about their teaching experience, with 62% of those for whom the question was relevant seeing it as a positive and useful experience. While this is down from 74% who answered the question in the same way in 2005, it appears that the question had fewer possible responses in 2005 and that this may account for the difference. A further 22% saw it as an agreeable if unfruitful break in their week (broadly similar to the 20% who chose this option in 2005). About one-tenth (10%) of respondents chose "other" as their response to this question ("other" appears not to have been a response available in 2005). Three-quarters of this "other" group indicated that teaching was positive, but was not valued. As such only about 10% saw teaching in wholly negative terms.

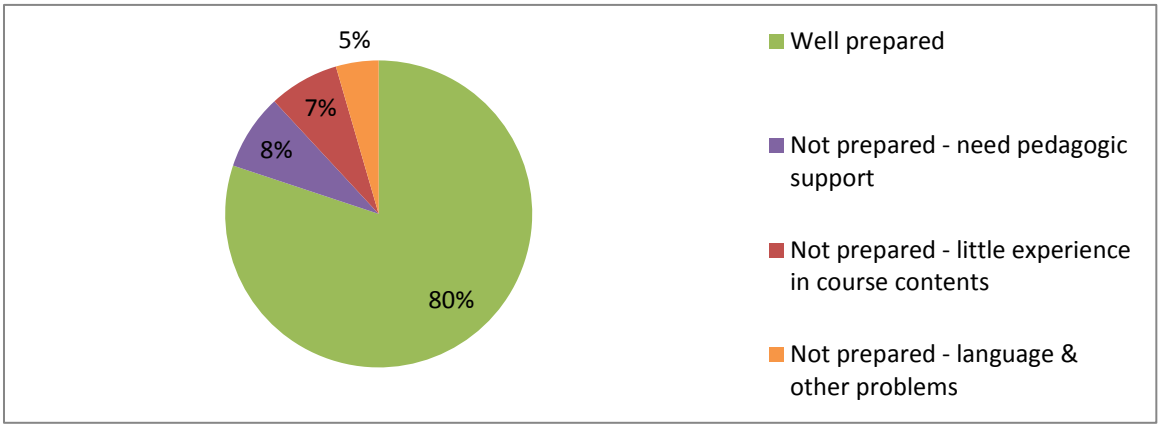
Four-fifths of those for whom the question was relevant (80%) identified that they feel well prepared to take part in teaching activities (between 78% and 82% with a 95% confidence interval). This is considerably higher than the 47% who answered the question in the same way in 2005. The difference here is so great that it seems very likely that this reflects a change in the broader population. Of those who did not feel well prepared, 40% (8% of all those involved in teaching) identified that they felt they needed more advice on pedagogical aspects while a further 37% (7% of all those involved in teaching) cited having little experience in the contents of the course they were teaching. Whether this increased sense of being well prepared is because they are actually better prepared than in 2005, or whether it is because their understanding of what it means to be well prepared has changed remains unclear.

Chart 30: How do you consider your teaching experience?



Note: Based on Q. 35 "How do you consider your teaching experience". The question was answered by 924 respondents who reported participating in teaching.

Chart 31: Do you feel well prepared for your participation in EPFL's teaching activities?



Note: Based on Q. 36 "Do you feel well prepared for your participation in EPFL's teaching activities?" and Q. 37 "If not, why not?" The question was answered by 924 respondents who reported participating in teaching.

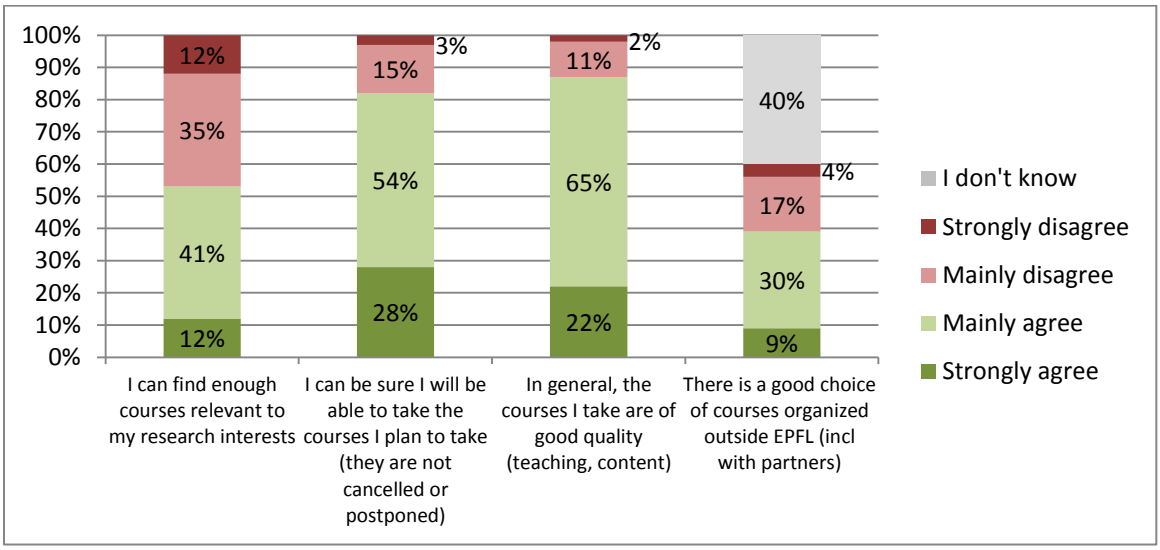
9. Training activities

9.1 Courses available to them

Just over half of the respondents (53%) agree (i.e., strongly agree or mainly agree) that they find enough scientific courses at doctoral level relevant to their interests. With respect to the courses they take, 87% agree or strongly agree that they are of good quality and 83% agree that they can be sure the course will be available (i.e., that it will not be cancelled or postponed). Three-fifths of those who answered the question (39% of all respondents) agree or strongly agree that there is a good choice of courses organised outside EPFL, including in partner institutions. 40% of respondents indicate that they not know with respect to this final question. With respect to each of these questions there are differences between the different doctoral programmes (as can be seen in Table A in the appendix).

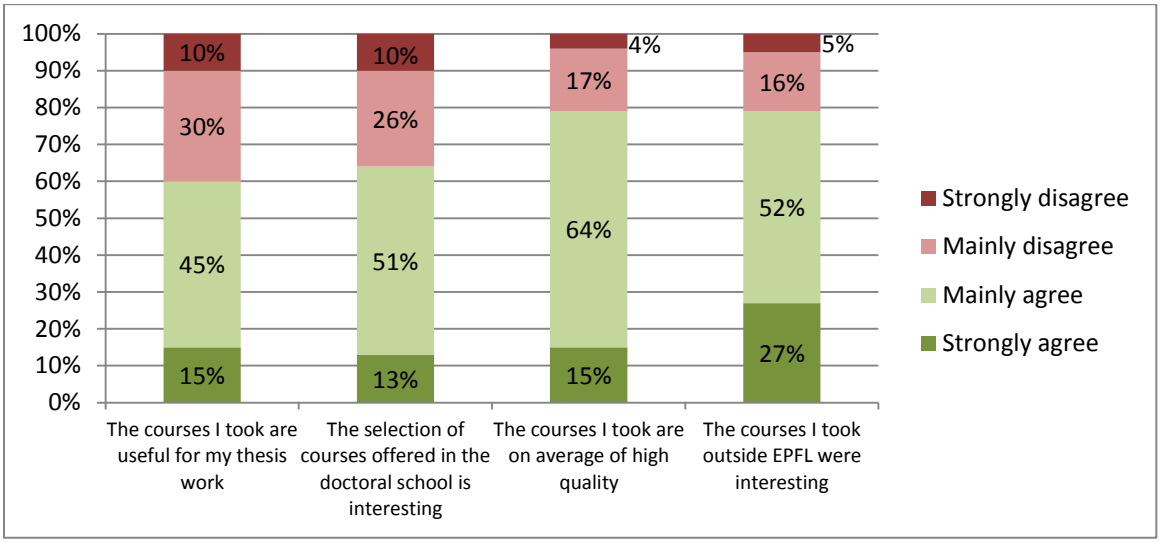
The questions asked in 2005 were not identical, nonetheless comparisons can be made. In 2005 15% strongly agreed and a further 45% agreed with the statement "The courses I took are relevant for my thesis work". This is a little more than the percentage which in 2012 agreed with the statement "I can find enough courses relevant to my research interests". In 2005 15% strongly agreed and 64% agreed that "The courses I took are on average of high quality". Although the 2012 question arguably sets the bar a little lower (it requires only "good quality" instead of "high quality"), the percentage agreeing has not gone up to any dramatic extent (87%). If "don't know" responses are excluded from the 2012 survey, the percentage responding favourably to the question on courses outside EPFL has not changed in any dramatic way either.

Chart 32.1: Respondents rating of the quality and range of doctoral level scientific courses



Note: Based on Q. 44, 45, 46, and 47: "Please rate the quality and range of doctoral level scientific courses as follows: I can find enough courses relevant to my research interests; I can be sure I will be able to take the courses I plan to take (they are not cancelled or postponed; In general, the courses I take are of good quality (teaching, content); There is a good choice of courses organized outside EPFL (including where the host institution partners with EPFL)."

Chart 32.2: 2005 Doctoral survey respondents rating of the quality and range of courses



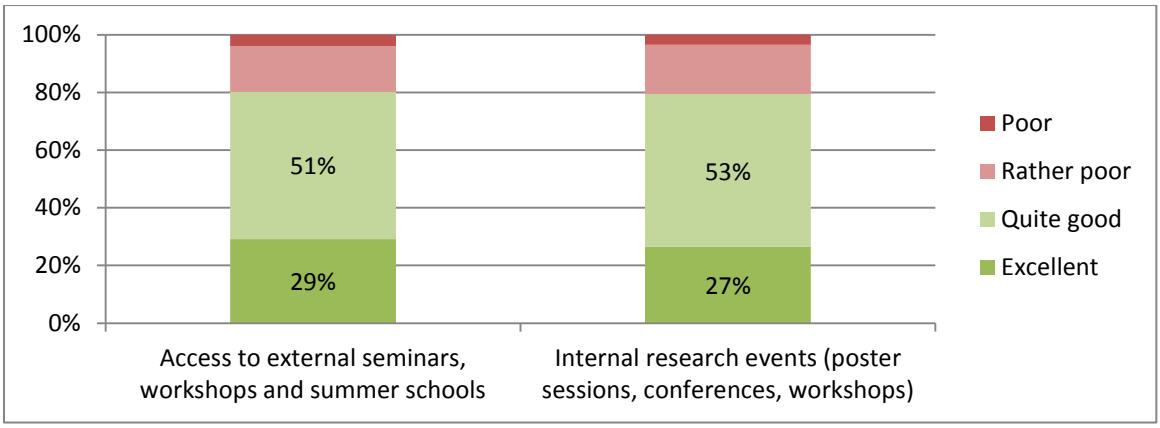
Note: From 2005 Doctoral Survey Report, pg. 25

Respondents were also asked to rate their doctoral programme as a scientific community with respect to:

- access to external seminars, workshops and summer schools
- internal research events (poster sessions, conferences, workshops).

Their responses are presented in Chart 33. Four-fifths rated their programme as either "excellent" or "rather good" on both of these questions (80% in both cases). There are differences between doctoral programmes in relation to these questions (see appendix Chart T and U).

Chart 33: Respondents rating of their doctoral programme as a scientific community in terms of…



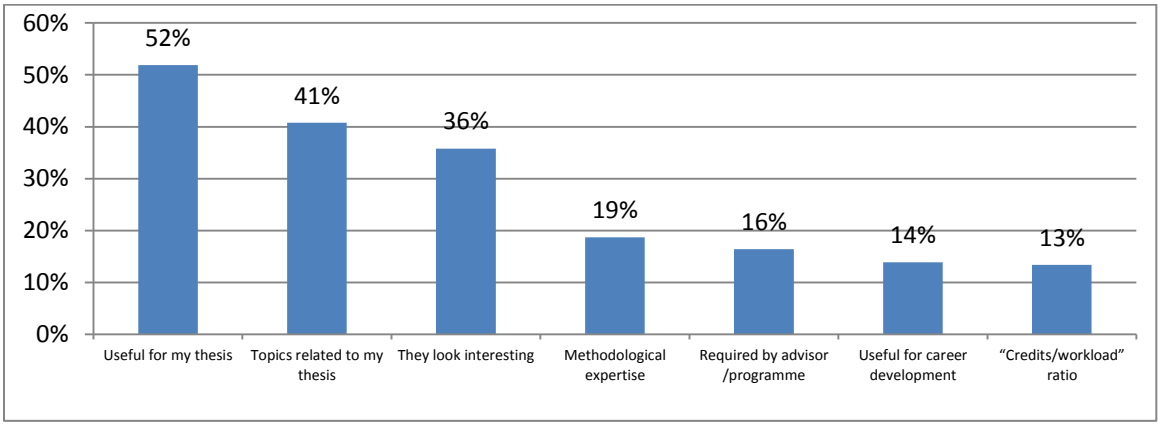
Note: Based on Q. 42 & 43: "Please rate your opinion of your doctoral programme as a scientific community in terms of: Access to external seminars, workshops and summer schools; Internal research events (poster sessions, conferences, workshops)."

Why do respondents take the courses that they do? Respondents were given the opportunity to identify their two principal reasons for choosing courses. The answers are represented in Chart 34.1. Over half (52%) identify that the courses are chosen because they are or will be useful for their thesis. A further 41% identify that the courses chosen will broaden their expertise on topics related to their thesis. One-third (36%) identify that they pick courses that look interesting to them. About one-fifth (19%) identify that they choose courses that will broaden their methodological knowledge. Being told to take the course by their advisor or programme (16%), its utility for their career

development (14%) and its credit/ workload ratio (13%) are the three least mentioned reasons given for choosing courses.

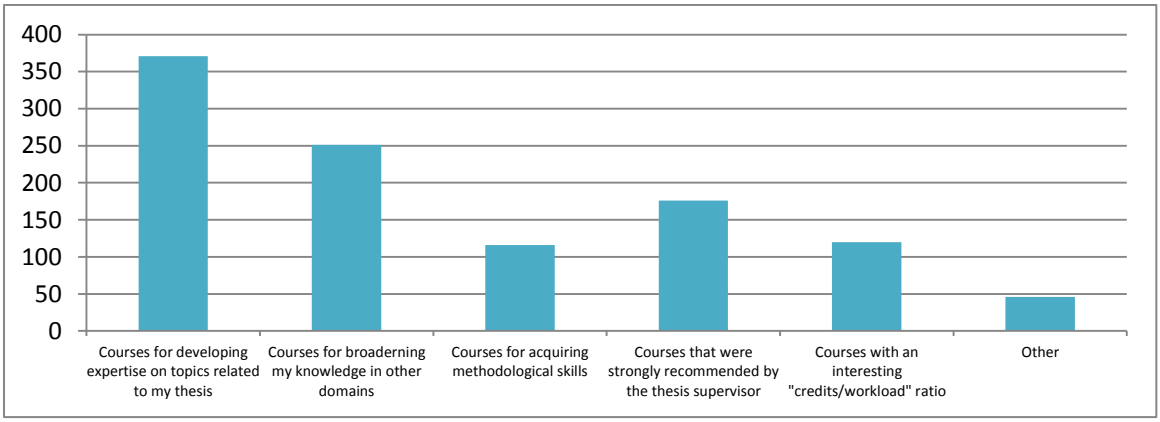
Chart 34.2 presents the data from the 2005 survey. The question is not the same and nor are the possible answers. Furthermore, the 2012 survey restricted respondents to 2 answers while there was no such restriction in 2005. Despite all those differences, the picture emerging from the two surveys is broadly the same. Respondents chose courses that were relevant to their thesis and that interested them or broadened their knowledge. Methodological knowledge and the credit/ workload ratio are less important as reasons for choosing a course. The relative importance of courses being prescribed by an advisor seems to have diminished between 2005 and 2012, though this may be a function of the fact that respondents had to choose fewer responses in 2012 than in 2005.

Chart 34.1: What are the (two) main reasons you take the courses you choose?



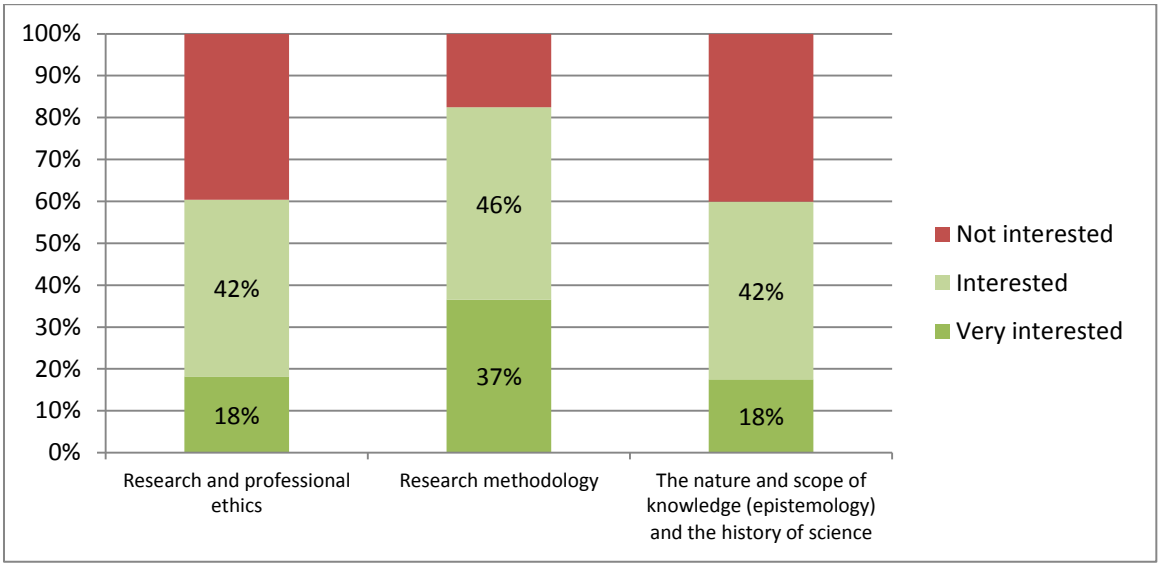
Note: Based on Q. 48: "What are the main reason(s) you take the courses you choose?: They will be useful for my thesis work; They will broaden my methodological expertise; They will broaden my expertise on topics related to my thesis; They look interesting to me; They will be useful for my career development; They have an interesting "credits/workload" ratio; My advisor tells me to take them, or my programme requires it". Respondents could give two answers, answers total to more than 100%

Chart 34.2: 2005 Doctoral survey responses to question "How do you select your courses?"



Note: From 2005 Doctoral Survey Report, pg. 26

Chart 35: How interested are they in various types of courses?

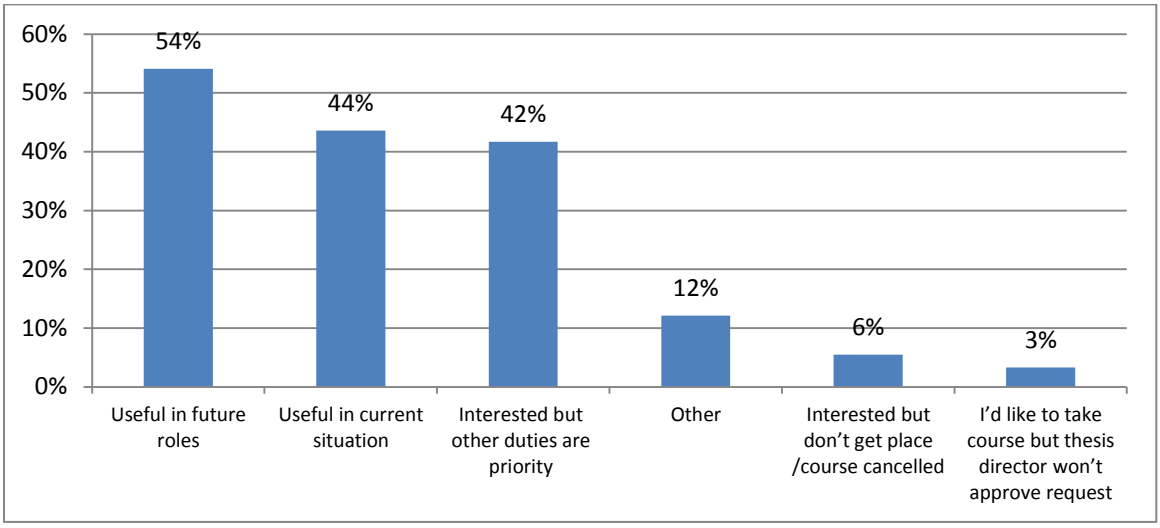


Note: Based on Q. 49, 50 and 51: "Please indicate whether you would be interested in the following training: Research and professional ethics; Research methodology; The nature and scope of knowledge (epistemology) and the history of science."

Respondents were also asked if they were interested in particular types of training courses. Their responses are presented in Chart 35. Two-thirds (60%) identified that they were interested or very interested in research and professional ethics and in epistemology history of science (60%), while 83% expressed an interest in research methodology courses. There are differences between the ways in which those on different doctoral programmes respondent to these questions (See appendix Chart V), but no differences between respondents dependent upon their year of matriculation.

Respondents were also asked their opinion of management or professional skills courses (scientific communication skills, presentation skills, team leadership training, language courses, etc.). Answers are presented in Chart 36. Respondents could choose all the available options if they wanted. The response most frequently chosen was "they will be useful in my future roles", followed by "they are useful in my current situation". The third most commonly chosen response was "I'm interested but my teaching/lab/research duties take priority and I've had to cut time (or even withdraw) from the course". For the 12% who responded "other", they principally gave various reasons as to why they did not need or were not interested in these courses.

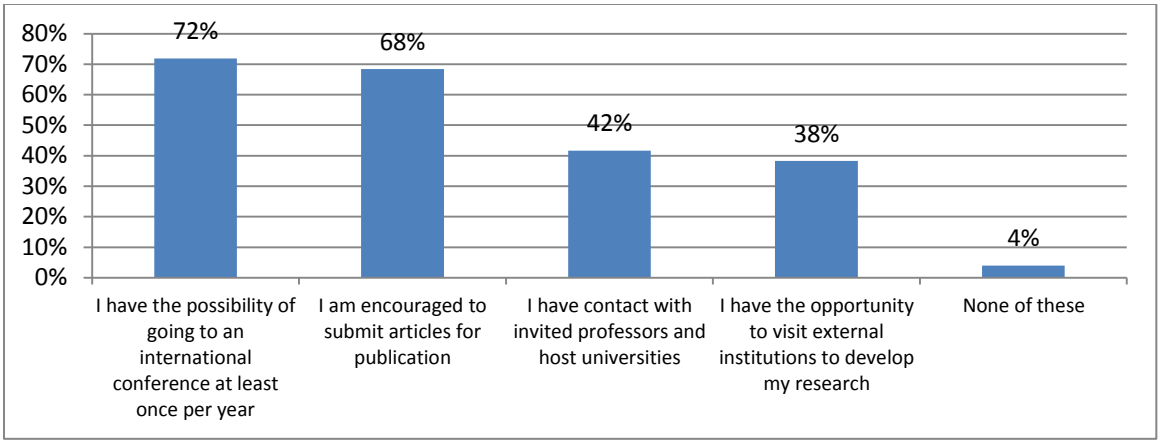
Chart 36: What is their opinion of management or professional skills courses (scientific communication skills, presentation skills, team leadership training, language courses, etc.)?



Note: Based on Q. 52: "What is your opinion of management or professional skills courses (scientific communication skills, presentation skills, team leadership training, language courses, etc.)?: They are useful in my current situation; They will be useful in my future roles; I'm interested and want to sign up but don't get a place or the course/s is/are cancelled; I'm interested but my teaching/lab/research duties take priority and I've had to cut time (or even withdraw) from the course; I'd like to take the course but my thesis director won't approve my request; Other [specify]"Respondents could give multiple answers, answers total to more than 100%.

The questions on opportunities for international collaboration and outreach gave respondents the opportunity to select multiple answers. Only 4% of respondents identified that they did not have any opportunities for international collaboration, or, in other words, 49 respondents. Of these 49 respondents, 20 had matriculated in 2011, 8 matriculated in 2010 and 21 matriculated in 2009 or earlier. Given the small numbers involved, it does not make sense to seek to compare doctoral programmes in terms of the "rate" of reporting no opportunities for international collaboration. However, almost all doctoral programmes are represented among these 49 respondents. More generally it can be seen that 28% did not have the opportunity to travel to an international conference at least once per year. This is not significantly linked to year of matriculation – more established respondents are not more likely to have this opportunity than those in their first two years.

Chart 37: Opportunities for international collaboration and outreach during their PhD



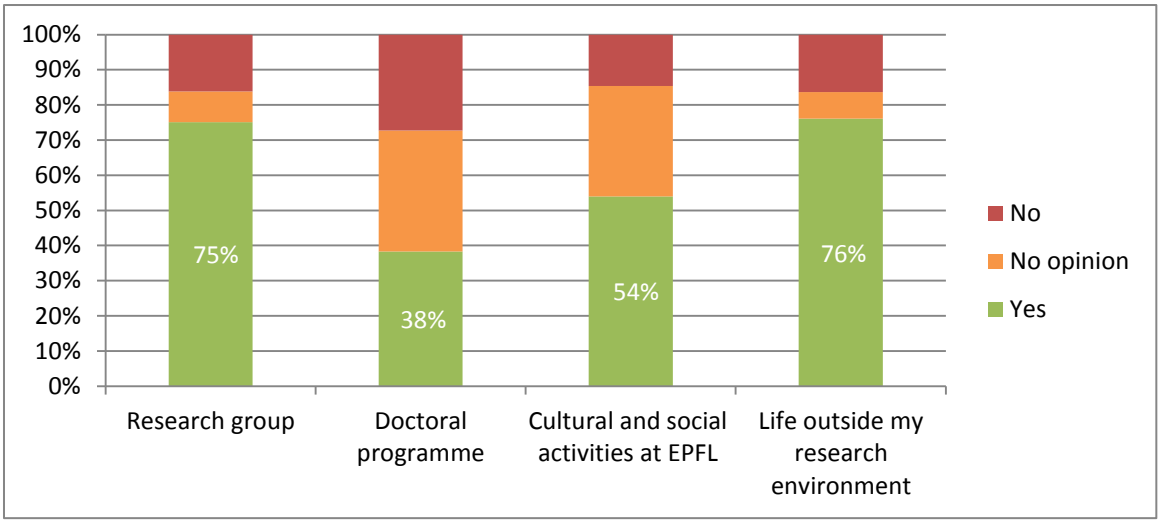
Note: Based on Q. 53: "Do you have the opportunity for international collaboration and outreach during your PhD?" Respondents could give multiple answers, answers total to more than 100%

10. Social life

10.1 Quality of social life

Respondents were asked a series of questions regarding their social life and their social interactions. Three-quarters agree that they are satisfied with the social life within their research group (75%) and outside their research environment (76%). Just over half (54%) are satisfied with the offer of cultural and social activities at EPFL (associations, events, etc.). Less than two-fifths (38%) are satisfied with the social life in their doctoral programme. Comments were invited with respect to this question. Comments typically referred to not having time for a social life. As one respondent put it: "How can I have social life when I have to work 60 hours or more during the week?! After the stress I have in the lab, I just wanna go home and relax".

Chart 38: Agreement with statements "I am satisfied with the social life in…"



Note: Based on Q. 55" Please evaluate the quality of your social life during your doctorate: I am satisfied with the social life in my research group; I am satisfied with the social life in my doctoral programme; I am satisfied with the offer of cultural and social activities at EPFL (associations, events, etc.); I am satisfied with the offer of cultural and social activities at EPFL (associations, events, etc.); I am satisfied with my social life outside of my research environment".

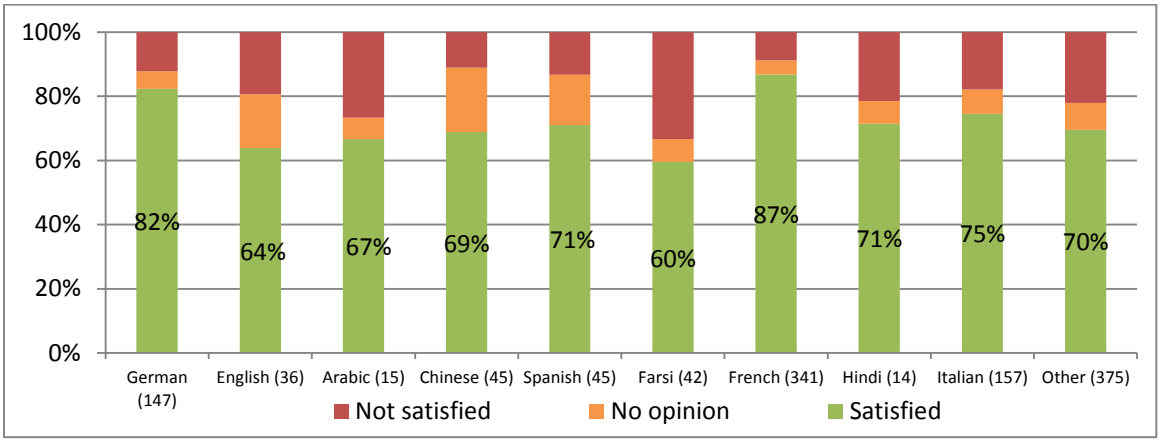
There are some notable patterns in relation to these questions.

- Those who are Swiss or have Swiss residency status are most satisfied with their social life in all four settings. For example, 85% of those who are Swiss and 83% of those who have residency are satisfied with their social life in their research group, as compared to 71% of those who have non-resident status (using chi-square, $p<0.001$).
- Their satisfaction with social life in EPFL and outside of their research environment increases with the length of time since they matriculated, with, for example, 70% of those who matriculated in 2011 being happy with their social life outside their research environment, as compared to 82% of those who matriculated in 2007 (using chi-square, $p=0.036$). Their satisfaction with their social life in their research group and in their doctoral programme is not dependent upon the year of matriculation.
- Their satisfaction with all four aspects of social life is related to their continent of origin, with Asian respondents being less satisfied with their social life than those from Europe and the Americas. For example, 35% of Asian respondents report being happy with the social life in their doctoral programme, as distinct to 47% of those from the Americas and 39% of those from Europe (using chi-square, $p<0.001$). While 62% of Asian respondents identify they are

happy with their social life outside of the research environment, the figure for American and European respondents is 73% and 80% respectively (using chi-square, p=0.002).

- On a related note, the language of origin is associated with the level of satisfaction with their social life (see Chart 39 for an example). For all questions, native French speakers were most satisfied with social life. The association between having French as a mother tongue and being satisfied with all four domains of the social life is significant (chi square, p <0.001). When legal status in Switzerland is taken into account the relationship remains: for those who have non-resident status, having French as a mother tongue is associated with being satisfied with the social life outside the research environment (p=0.011), at EPFL in general (p=0.024) and in their research group (p=0.045).

Chart 39: Agreement with statement "I am satisfied with the social life outside my research environment", by mother tongue of respondents



Note: The number of respondents in each category is given in brackets. It should be noted that, prior to 2009, "Chinese", "Farsi" and "Hindi" were typically listed within the category "Other", however the relationship between language and social life remains evident in those earlier years.

In a general sense, one could say that the pattern here is that over a period of time, respondents settle in and become happier with their social life, however those with non-resident status, those whose mother tongue is not French and those from Asia show lower levels of satisfaction.

10.2 Security on campus

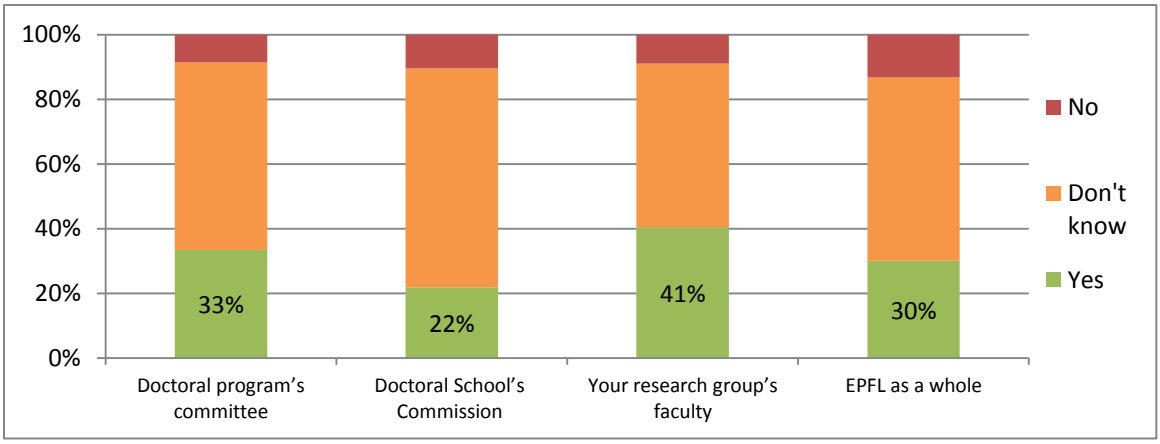
The survey asked respondents if they feel "there is adequate protection on campus to ensure your personal safety against aggressive or violent situations". Two-fifths (43%) said "Yes, very much", while a further 52% responded "Yes, it is fine". Slightly less than 5% indicated "No, it is poor" while 1.2% indicated that the means of protection on campus is "very poor". In total, this represents 69 respondents (out of 1,217) who indicated that they were not happy with the means of protection against aggressive or violent situations – a 95% confidence interval would suggest that this represents between 87 and 144 doctoral students in the wider population. This was one of the very few variables in the study where there were gender differences evident[6]. Male respondents were more likely to say that they very much feel there is adequate security (46% of male respondents as compared to 34% of the female respondents), while female respondents were more likely to say that protection on campus was "fine" (58% of female respondents as compared to 50% of males). There was no gender difference in the likelihood of them stating that the means of protection on campus were poor.

[6] All questions in the survey were analysed to see if meaningful gender differences existed – in the vast majority of questions they did not.

11. Representation and social support

11.1 Representation

Chart 40: Do respondents feel adequately represented as a doctoral candidate at the following forums



Note: Based on Q. 57, 58, 59 and 60: "Do you feel adequately represented as a doctoral candidate at the following forums : Your doctoral programme's committee; The Doctoral School's Commission (the meeting of all the programme directors and the dean); Your research group's faculty ; EPFL as a whole ."

Respondents were asked whether or not they feel adequately represented at a number of forums in EPFL. The most common answer in all cases was "don't know". There are differences between doctoral programmes with respect to the sense of being represented (see Chart W in the appendix).

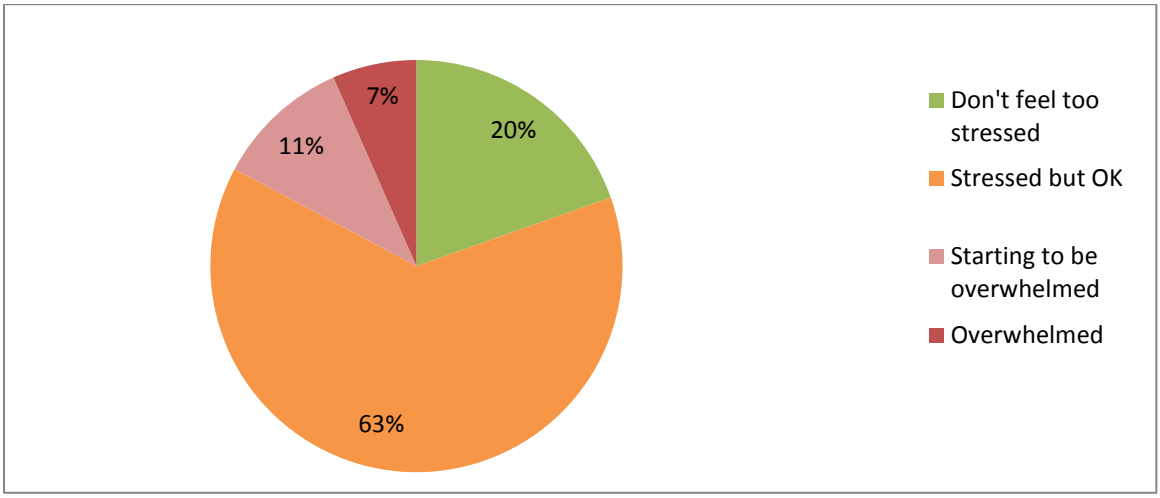
11.2 Stress and work relationships

There were a number of questions regarding the stress that respondents feel. Four-fifths of respondents (83%) identified that either they did not feel too stressed or that they were feeling stress but doing OK. If we apply a 95% confidence interval to this, it suggests that somewhere between 284 and 377 people in the broader population of doctoral students are either starting to be overwhelmed or are already overwhelmed due to the stress they are feeling.

Respondents were asked what the source of most stress in their life was right now. Of the 17% who were either starting to feel overwhelmed or who were already feeling overwhelmed their principal sources of stress were supervision (27% of this group), managing work and personal life (26% of this group) and workload (25% of this group). Respondents were far more likely to report starting to feel overwhelmed or feeling overwhelmed if they also reported having experienced difficulty in their working relationship with their thesis director (up from 17% to 43% - see charts 43 and 44), or if they saw the scientific advice from their thesis director as not being useful (up from 17% to 37% - see chart 24).

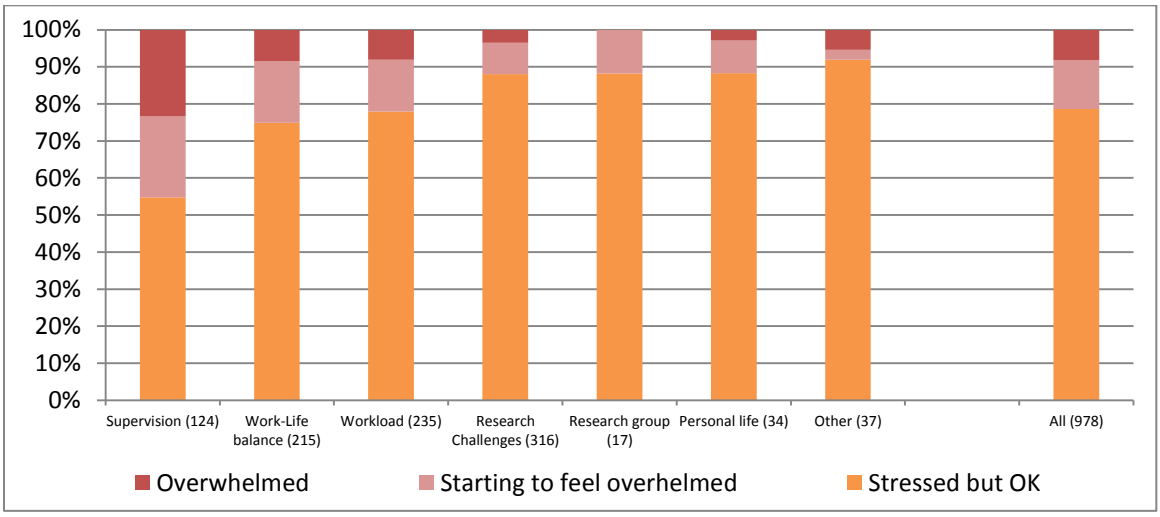
If we look again at the whole sample, 124 respondents (10% of the total number of respondents) said supervision was the source of most stress in their lives. 45% of these report either starting to be overwhelmed or being overwhelmed by stress. For the 215 respondents who cited "managing my doctorate with my life" as their source of most stress (18% of the total responses, referred to as "Work-life balance" in the chart 42), 25% were either starting to be overwhelmed or were overwhelmed.

Chart 41: How do respondents judge their state of well-being?



Note: Based on Q. 61: "How would you consider your current well-being?"

Chart 42: How do respondents who reported some stress judge their state of well-being, by sources of most stress in their life right now?

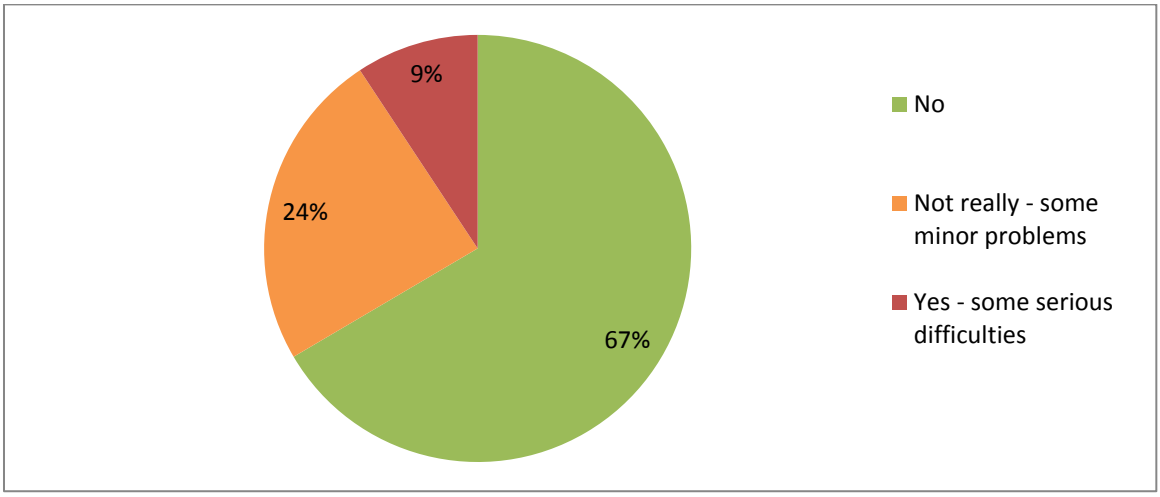


Note: Based on Q.61 (as above) and Q.62: "What do you think causes the most stress in your life right now?" The number of respondents in each category is given in brackets. 239 who reported not feeling too stressed are not included.

The extent to which respondents reported feeling stressed was associated with gender, in that 23% of the female respondents reported either starting to feel overwhelmed or feeling overwhelmed, as compared to 15% of the male respondents. Whether this reflects a higher level of actual stress or a greater self-awareness of stress in female respondents is not clear[7]. There was no reported difference in the sources of stress for male and female respondents, however, for female respondents whose principal source of stress was supervision, 59% of them reported either starting to feel overwhelmed or feeling overwhelmed, as compared to 39% of male respondents who reported that their principal source of stress was supervision. There were no differences between doctoral programmes in the extent to which respondents reported feeling stressed, however there were differences in their reported principal sources of stress (see appendix, Chart X).

[7] Evidence from psychological studies suggests it may be the latter. Men are no less likely than women to report stress if asked how they are feeling "right now", but are less likely to report stress when asked how they are feeling in general. The question asked in this survey was of a general nature.

Chart 43: Have respondents ever experienced difficulties in their working relationships with particular personnel (teaching, administrative, technical, security staff, etc.)?

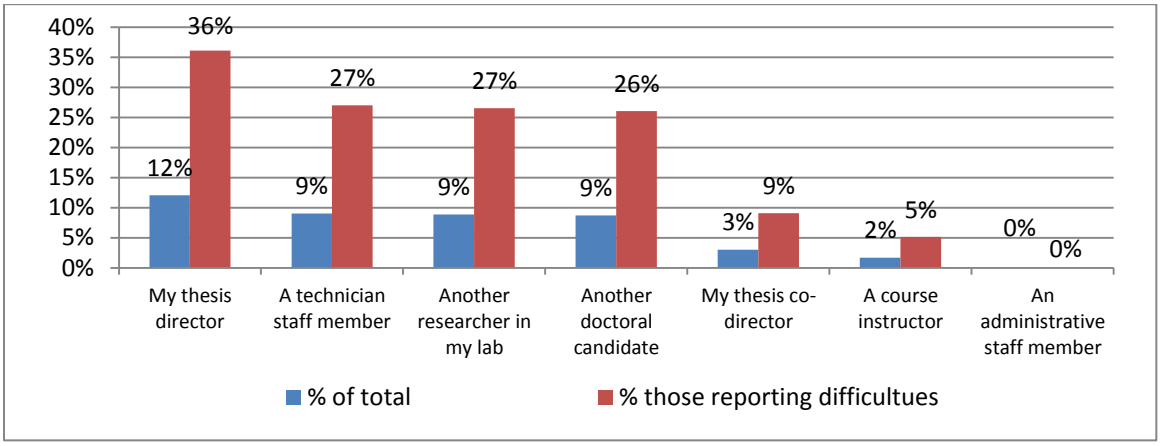


Note: Based on Q. 63: "Have you ever experienced difficulties in your working relationships with particular personnel (teaching, administrative, technical, security staff, etc.)?"

Respondents were asked if they had ever experienced difficulties in their working relationships with particular personnel (teaching, administrative, technical, security staff, etc.). Two-thirds of respondents reported no difficulties (67%), one-quarter reported minor difficulties (24%) and one-tenth (9%) reported serious difficulties (chart 43). The likelihood of reporting difficulties is not related to doctoral programme, gender, continent of origin or mother tongue. Those who matriculated in 2011 are less likely to report difficulties (possibly because they have had less time in which the experience difficulties than other respondents) but there is no real difference in the rate of reported difficulties between other years of matriculation.

Respondents were asked with whom they had mainly experienced difficulties (respondents could answer multiple times, so the total responses add up to more than 100%, see Chart 44). About a third (36%) of those who reported difficulties – 12% of the total responses – were mainly with their thesis director. A 95% confidence interval of would suggest that between 10% and 14% of the broader population of doctoral students has experienced difficulties with a thesis director. The next most common response was a technical staff member, another researcher in my lab and another doctoral candidate (9% of total for all three responses). Only 3% reported difficulties with a thesis co-director; however this must be seen in light of the fact that only 26% of them officially had a thesis co-director (the rate of reported difficulties with a co-director among those listed on IS Academia as having a co-director is 7%). Not one of the 1,217 respondents reported having difficulties mainly with a member of administrative staff.

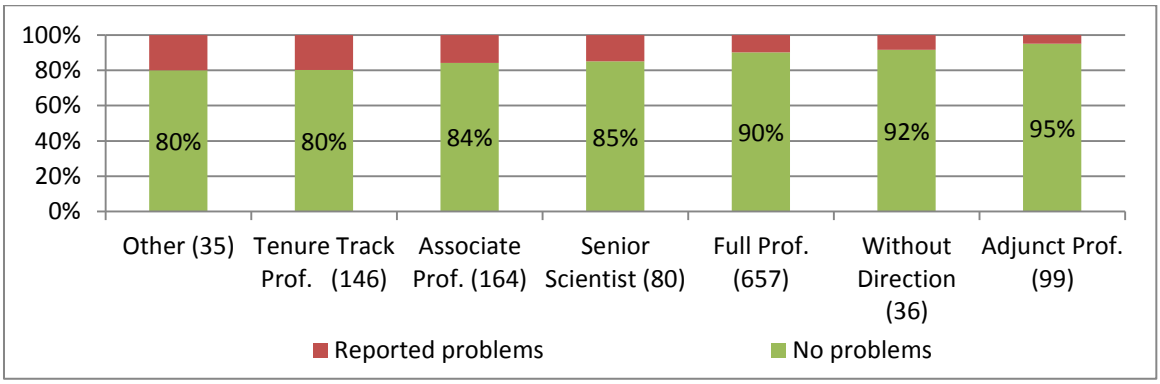
Chart 44: With whom (mainly) did you have these difficulties?



Note: Based on Q. 64: "With whom (mainly) did you have these difficulties? Note: all answers to this questionnaire will remain confidential." Possible answers were as listed on the chart. Respondents could give multiple answers, answers could total to more than 100%

The rate at which difficulties with a thesis director or a technician were reported varied depending on the doctoral programme (see appendix Chart Y). The rate at which difficulties with a thesis director were reported also varied depending on the status of the director (Chart 45). This association between status of director and having experienced problems with a thesis director is significant (using chi-square, p=0.002). Within the survey there is also an association between age of respondents and likelihood of reporting difficulties with a thesis director (those in their thirties are more likely to report difficulties when compared to those in their early twenties), however this trend is not found to be statistically significant.

Chart 45: Did they report difficulties with thesis director, by status of director

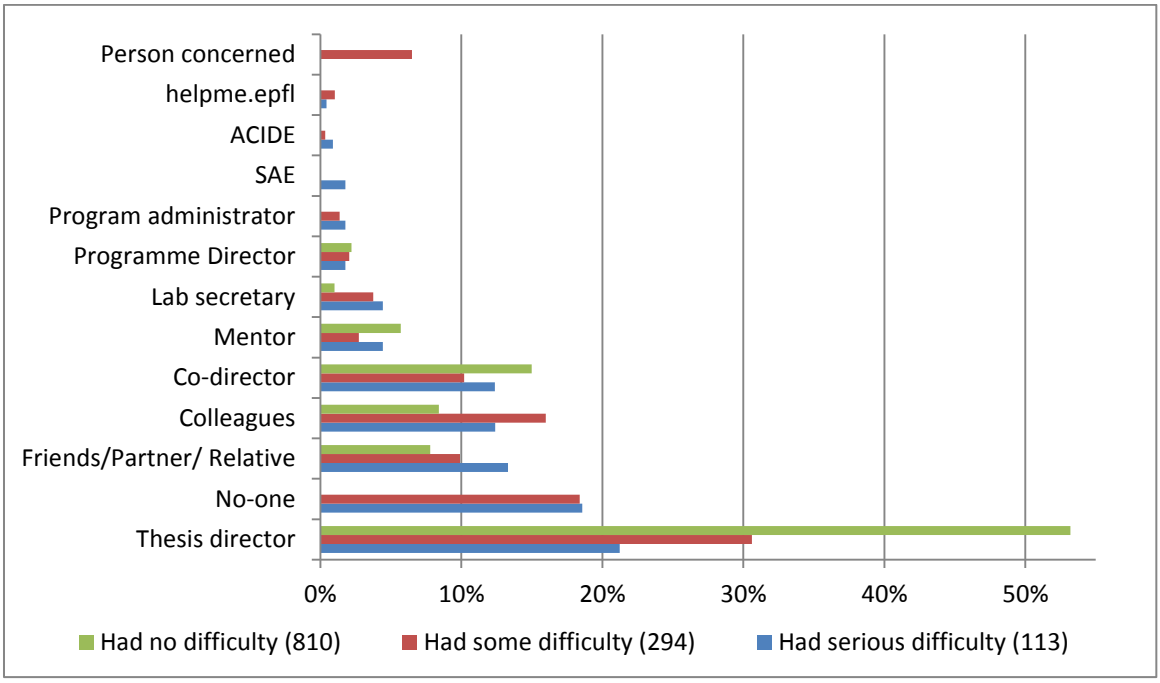


Note: Based on Q. 64, "With whom (mainly) did you have these difficulties" (answered, "My thesis director") and on data from IS Academia. The number of respondents in each category is given in brackets As noted above, some respondents listed on IS Academia as "without direction" did answer questions related to a thesis director.

Chart 46 shows who the respondents identified as the first person they turned to for help, or would turn to if they had some or had serious difficulties. The figures are provided as a percentage of those who reported having this level of difficulties (e.g., 31% of the 294 who report having some difficulty identified that they turned first to their thesis director for help). While the question was closed with a limited range of responses possible, the option "Other [specify]" was chosen by a substantial proportion of respondents in both cases. In Chart 46, these "other" responses have been coded and included in the chart. In both the cases of those who cited "some difficulties" and those who cited "serious difficulties" the thesis director was the person they turned to first. The next most commonly cited response was 'no-one/ found no help' (which was not one of the options provided

but instead was entered as "other"). This accounts for 18% of those who had some difficulties (54 respondents) and 19% of those who had serious difficulties (21 respondents). Given that "no-one" was not actually one of the options available, one cannot help but wonder how high the percentage of respondents choosing that option would have been had it been available.

Chart 46: If you had or would have some or serious difficulties, who did you/would you turn to first?



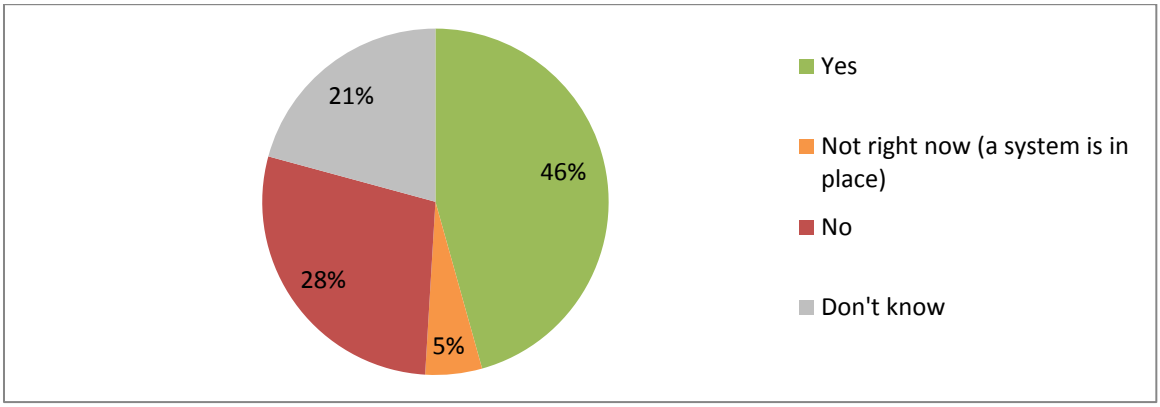
Note: Based on Q. 65: "When you had a serious relational problem, who was the first person you turned to for help?" or "When you had such a problem, who was the first person you turned to for help?" or "If you had a relational problem, who would be the first person you turn to for help?", depending on their answer to Q. 63. The number of respondents in each category is given in brackets.

What Chart 46 shows is that respondents who have not had difficulties often assume that the person they will talk to first in the case of difficulties is their thesis director. However, Chart 46 shows that those who have had difficulties are actually far less likely to talk first to their thesis director, in part[8] because those difficulties in many cases have been with the thesis director. For this group, they either do not find someone else to talk to about their difficulties - hence about 18% of those who have had difficulties found no-one to talk to – or they turn to friends/partners or relatives.

Given that few respondents indicated that they would or did talk to a mentor in the case of difficulties it is instructive to look at the data related to mentoring. Respondents were asked if they had a designated mentor in their doctoral programme. Responses are presented in Chart 47 and in Chart Z in the appendix. 46% indicated they have a mentor, while 21% indicate that they do know if they do or not.

[8] In part, but not exclusively. 53% of those who had no difficulty thought that, if they did, they would talk to a thesis director. But, only 40% of those who actually had some relational difficulty (and only 35% of those who had a serious relational difficulty) with someone who was not their thesis director, actually did talk first to their director.

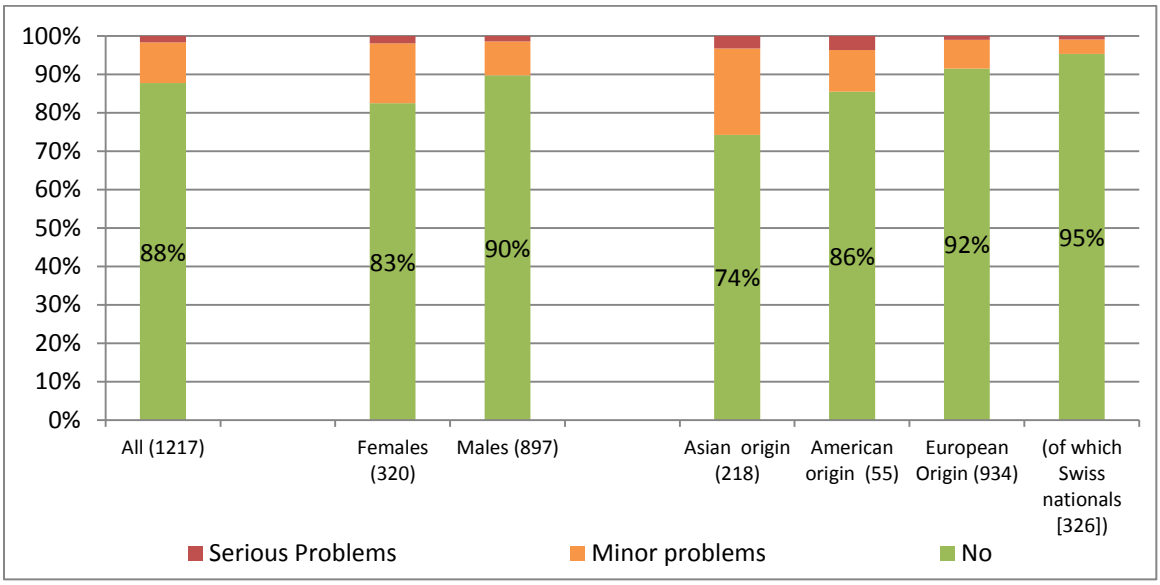
Chart 47: Do you have a designated mentor as part of your doctoral programme



Note: Based on Q. 66 "Do you feel you've ever had problems during your doctoral studies through discrimination against your ethnicity, religion, origin, gender or sexual orientation?"

11.3 Discrimination

Chart 48: Do you feel you've ever had problems during your doctoral studies through discrimination against your ethnicity, religion, origin, gender or sexual orientation?



Note: Based on Q. 66 "Do you feel you've ever had problems during your doctoral studies through discrimination against your ethnicity, religion, origin, gender or sexual orientation?" and data from IS Academia. The number of respondents in each category is given in brackets.

Almost nine-tenths of respondents feel that they have not been discriminated against on their basis of ethnicity, religion, origin, gender or sexual orientation. However, the rates of reporting feeling discriminated against were higher for some groups. Women were more likely to report having been discriminated against than men (chi-square, significance p=0.002), and those from Asia and the Americas are more likely to report having been discriminated against than Europeans. Within Europeans in general, those from Switzerland were least likely to feel they had experienced discrimination (again, found to be significant using chi-square, p<0.001)[9].

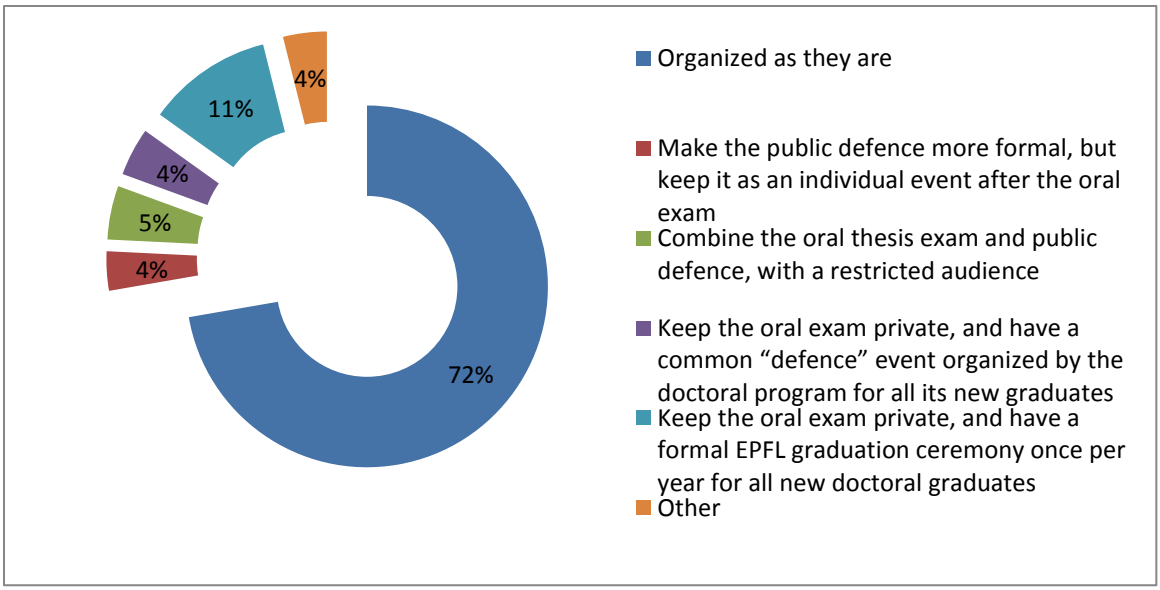
[9] Given how the question was asked we cannot assume the basis of the discrimination experienced. For example, we don't know that 17% of women have experienced being discriminated against on the basis of their gender - they could just as easily have been discriminated against on the basis of ethnicity, religion, origin or sexual orientation.

12. Finishing the doctorate

12.1 The final exam

Respondents were asked how they would like to see the final exam and defence process. Almost three-quarters (72%) opted to keep the oral exam and public defence as it is. The next most popular response (11%) was to keep the oral exam private and have a formal EPFL graduation ceremony once per year for all new doctoral graduates. No other response accounted for more than 5% of responses.

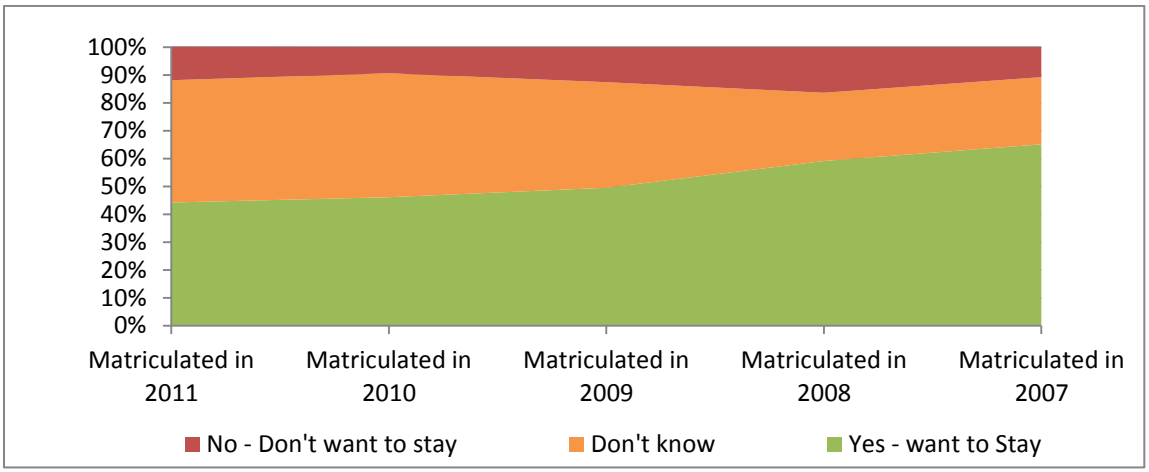
Chart 49: How respondents would like to see the final exam and defence process



Note: Based on Q. 68: "How would you like to see the final exam and defence process to obtain your degree?" Respondents could choose one response from those listed within the chart.

12.2 Where they plan to live after their doctorate

Chart 50: intention to stay in Switzerland after PhD, by year of matriculation



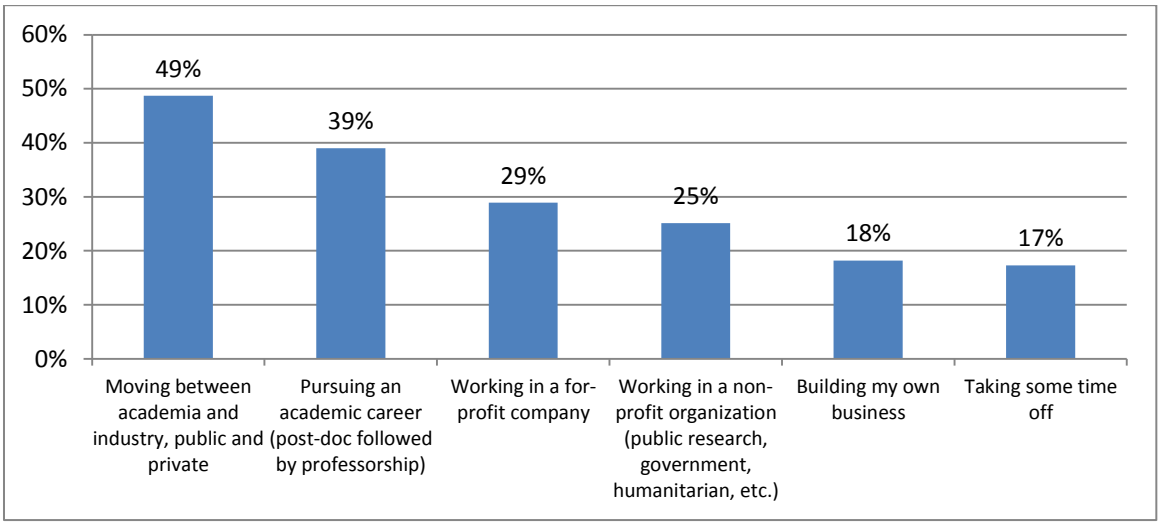
Note: Based on Q. 69: "Would you like to stay in Switzerland after your PhD?" Respondents could choose one response from the list provided within the chart.

Participants were also asked a number of questions regarding their future plans. When asked if they planned to stay in Switzerland after their doctorate, 51% said yes. This represents an increase from the percentage who said they would like to stay in Switzerland in the 2005 survey, which was 40%. In

2012, 37% said they don't know if they want to stay or not (roughly the same as the 41% who said they do not know in 2005). In 2012, 12% said they would like to leave, down from 17% in 2005. This greater interest in staying in Switzerland may reflect something of the changes in the global economic climate in the intervening period. It is possible that Switzerland "grows on" people during their time in EPFL (Chart 50); there is a clear relationship between the date of matriculation and the likelihood of wanting to stay in Switzerland after the doctorate; this relationship is significant (using chi-square, $p<0.001$). However Swiss nationals are no more likely to want to stay in Switzerland than those with non-resident status (53% of Swiss indicating they would like to stay, broadly similar to the figure of 49% for those with non-resident status).

12.3 What they plan to do after their doctorate

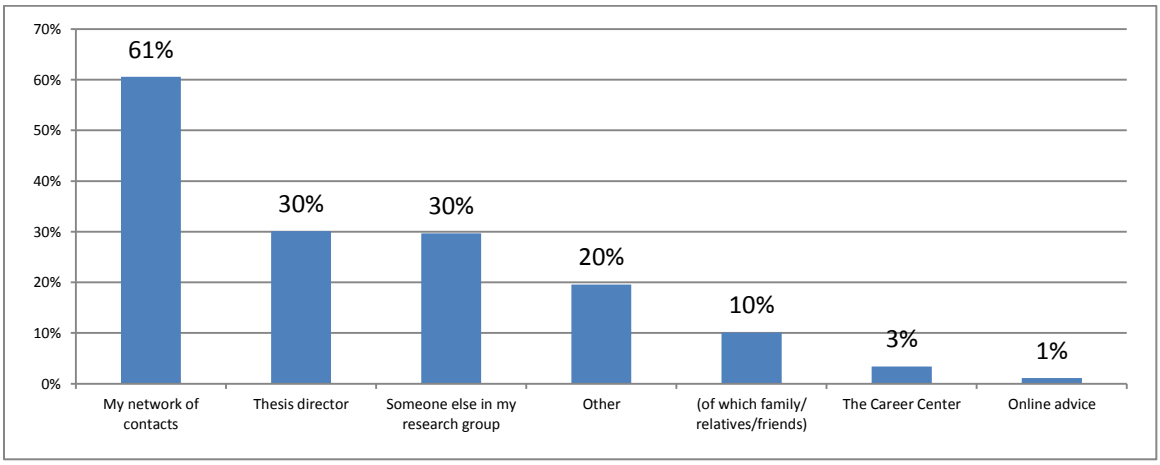
Chart 51: Where do you see yourself in the first few years after your PhD?



Note: Based on Q. 70: "Where do you see yourself in the first few years after your PhD?" Respondents could give multiple answers, answers total to more than 100%

Respondents were asked where they see themselves in the first few years after their PhD. Respondents could give multiple answers. Responses are in Chart 51. The most frequent response is to move between academia and industry (49% of respondents). This is followed by pursuing an academic career (39% of respondents). Respondents had the option to say "I don't have plans yet", however none of the 1,217 respondents selected this option. Again the comparison with 2005 is interesting – although the options available were not exactly the same and nor was the freedom in number of selections that could be chosen, and so direct comparisons cannot be made. In 2005, the survey offered a clear choice between pursuing an academic career (83% made this one of their three answers in 2005, as compared to 39% who made it one of their selections in 2012) and working in a company (88% selected this as one of their three options in 2005). In 2012 the most popular choice was to mix these two by moving between academia and industry (this option was not available to the respondents in 2005). It is interesting to note that in 2005 the percentage who indicated they would like to "start a new company" was 36%. In 2012 the percentage saying they would like to be "building my own business" was 18%. This change may have as much to do with the perceived insecurity in the external economic environment as anything else.

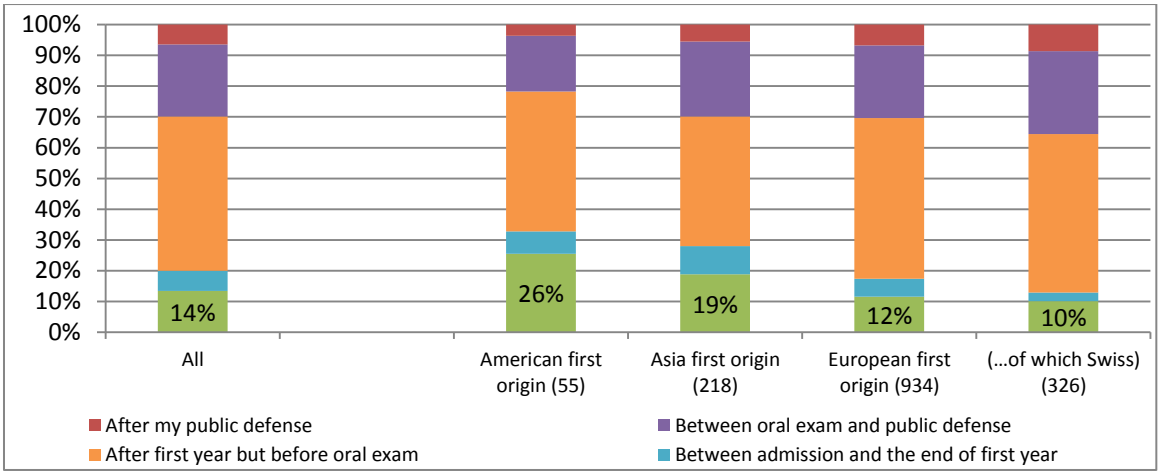
Chart 52: Who would you go to for help in planning your career?



Note: Based on Q. 71: "Who would you go to for help in planning your career?" Respondents could give multiple answers, answers total to more than 100%

Respondents were asked who they would go to for help in planning their career. They could give as many different answers as they liked (100% was possible for all answers). Three-fifths (61%) of them reported that they would consult their network of contacts for help. One-third identified they would go to their thesis director or members of their research group (30% in both cases) for help. About one-fifth (20%) specified "other" as one of their options. Of the 238 who specified "other" as one of their options, 131 identified who the "other" was. In the vast bulk of cases, this was a family member, a relative or friends. Relatively few (3%) indicated that they would go to the career centre[10].

Chart 53: When did you (or when do you plan to) start planning for your career after your PhD?



Note: Based on Q. 72: "When did you (or when do you plan to) start planning for your career after your PhD?" Only one response was possible. The number of respondents in each category is given in brackets

10 The Career Centre's own survey suggests a higher usage rate. This may reflect that (a) our survey went to all doctoral students whereas the Career Centre may work mainly with those who are finishing or finished and (b) our respondents may make use of the services of the Career Centre but do not regard that as "career planning".

Respondents were also asked when they began career planning. Half of them (50%) indicated that their career planning begins after their first year but before their oral examination. However 30% indicate that it begins after their oral exam. There are differences in how different groups of respondents respond to this question. Of those who have matriculated in 2011, for example, almost one-quarter (24%) indicate that they began their post-PhD career planning before making their application for doctoral studies at EPFL. For those who matriculated in 2008, in comparison, only 8% gave the same response. This may reflect a difference in understanding as to what "planning for your career after your PhD" actually entails, with those who are starting their doctorate feeling that they have done some planning, while those who are nearing the end seeing "planning" as a more formal or detailed activity. It is also evident that those who have travelled furthest for studies in EPFL have planned their post-PhD career earlier – while 26% of those from the Americas and 19% of those from Asia indicate that they have started their career planning before applying to EPFL, this drops to only 10% in the case of those from Switzerland (chart 53).

13. Discussion and conclusions

This section is divided in two parts. First we summarize the main conclusions and lessons from the information presented in the previous sections and then when appropriate, we compare the results of the 2012 survey with those of the 2005 survey, to evaluate the impact of the various actions taken since 2005, in the context of the "Excellence in Doctoral Education" project.

Two preliminary remarks need to preface these two parts. First, the data presented in this report are quite representative of the complete population of PhD students and the estimated 95% confidence intervals are always rather narrow. Second, the population of surveyed PhD students has evolved. The total number of PhD students has increased from 1,330 contacted students in 2005 to 1,952 in 2012. The distribution of origin of the students has also evolved. In 2005 the Doctoral school counted 41% of Swiss or Swiss residents, 42% Europeans and 17% coming from the rest of the world. In 2012 this proportion shifted to 28%, 42% and 30%. Finally, in 2005 a non-negligible number of doctoral students still were not part of the relatively new Doctoral school system, whereas in 2012 essentially all doctoral students are registered in the Doctoral school and a majority of them have been registered after September 2008, the date at which new doctoral regulations came into effect.

13.1 Summary of main conclusions

Overall the 2012 survey reveals an encouraging level of satisfaction and does not point to any glaring issue.

The most frequently cited positive aspects of being at EPFL include the quality of the research and of the research environment, and the prestige of the school. Research infrastructure and the quality of the labs and resources for research are other most positive aspects of EPFL. Salary and the quality of life in the Lausanne area are also contributing to the favorable rating by the doctoral respondents.

Negative points cover a broader spectrum with no strong consensus. The five most cited negative points are: Supervision (10%), stress and workload, doctoral courses, social life and language (with each 8%).

13.1.1 Application, recruiting and EPFL welcome

60% of our respondents applied only to EPFL and for 93% of them EPFL was the institution of choice. The most commonly cited other places they applied to were ETHZ, MIT, UC Berkeley and Cambridge. The reputation both of EPFL in general (40%) and of a particular lab/professor in particular (36%) was the most common reasons for choosing EPFL.

On average, 88% had no difficulty with the EPFL application process.

The data on the recruitment process suggest that a significant improvement is needed. Indeed, over 21% of hired respondents indicate that they did not participate in any interview (in person, Skype, or phone) or hiring days or other form of personal contact before being hired, although there might have been some ambiguity how to answer the question, that might reduce the negative impact of this percentage.

The PhD respondents are satisfied with the welcome they received and the newly introduced welcome days are well perceived and generally found useful.

13.1.2 Work of the doctoral student

Doctoral survey respondents worked on average in the last semester: 64% of their time on their doctoral research; 10% of their time on their own training; 15% of their time on their teaching; 8% of their time on other research activities; 4% of their time on other activities in their lab. This average breakdown can be considered rather satisfactory. The amount of time spent on doing research varies strongly (40% to 90%)

However, 24% of the respondents indicate that they are not involved in any teaching activities. Also, too few of them are given the opportunity to teach individual lectures and much less courses.

13.1.3 Education and supervision

The quality of the course offering is deemed good, but not the diversity of the available courses: only 53% of the PhD respondents find courses relevant to their interests. The introduction of scientific methodological courses, but also of ethics and epistemology courses is welcomed: this result comforts the ongoing initiative of the Doctoral school to meet these expectations.

Respondents also wish to have more opportunities for scientific activities outside EPFL and for international academic mobility (only 38% say they can travel to external institutions to develop their research). Again, the collaboration projects initiated by EPFL and supported by the Doctoral School go in the right direction.

On the supervision front, the survey still highlights some difficulties. About 22% of the respondents see their thesis director less than once a month and 30% say they receive insufficient advice from their thesis director. The survey could establish a clear, if not very strong, inverse correlation between the perceived quality of the supervision and the number of students supervised by the thesis director. The observed correlation justifies the monitoring by the Doctoral school of this ratio as an indicator of supervision quality. The perceived quality of advice is also related to the frequency of meetings between the respondents and their thesis director.

The impact of the introduction of thesis co-directors could not be fully assessed, in part because there seems to be some confusion in the mind of the PhD respondents about the exact definition of co-director (formal co-direction versus informal supervision by senior staff). An information effort must be made to clarify the ambiguity and reinforce formal co-directions.

The survey brings out one alarming statistics in terms of supervision: on average, less than 50% of the doctoral respondents have a designated mentor and many have never heard of the possibility to have one!

13.1.4 Social life and support, representation

Most respondents find the social life within their research group satisfactory (75%), but it is much less so within the doctoral program (38%). The degree of satisfaction is related to the geographical origin and cultural background. Asian respondents are more susceptible to cultural and integration problems.

Work and life on the campus are perceived as safe. Nevertheless a small minority of about 5% of our respondents feel threatened. The just-introduced violence/threat management task force will be able to address the concerns of this particular population.

17% of those surveyed indicate that they start to be or already are overwhelmed by their activities and environment. Two main sources of stress are the thesis supervisor and the difficulty in reconciling doctorate and personal life. Using a 95% confidence interval we would estimate that between 284 and 377 doctoral students in the wider population are starting to be or are already overwhelmed by stress. This estimate of persons "at risk" should prove very useful in establishing adequate support and prevention structures. The survey shows that these structures do not function as well as they might, as about 18% of those who had difficulties in their working relationship with particular personnel did not find the help they needed. In particular, as already indicated above, the mentoring system is not sufficiently implemented.

A large number of respondents (more than 50%) do not know that they are represented in the various bodies of EPFL and who represents them. Interest for doctoral student representation is low.

13.1.5 Finishing the doctorate

Doctoral respondents are in general satisfied with the current procedure of the private and public defenses and in that respect concur with the opinion almost unanimously voiced by the Cdoct.

If foreign respondents start planning their careers at an early stage, Swiss respondents on the contrary start very late. Overall, 30% start planning their career after the private defense, an alarming statistic. Another disturbing finding is the relatively low priority given by respondents to working in the private sector or to starting their own company.

A good half of the respondents would like to work in Switzerland after their graduation. This relatively high percentage points to the need for better support for third country students in securing work permits.

13.2 Comparison with 2005 survey

The main body of the report already compared the results of the 2005 and 2012 surveys when feasible. Here, we summarize in a single table the comparable statistics so as to have an overview. In general, the doctoral population appears to have changed: becoming more international and more likely to be attracted by our reputation. This may have impacted upon the expectations of the survey respondents. The data shows that satisfaction with scientific guidance may have risen since 2005; however other comparisons reveal no major changes, despite the numerous measures introduced since 2005 through the EIDE project.

One area where significant improvements were achieved is in the area of electronic application and tracking of the student's progress and in the quality of the website. Table 2 provides additional elements of comparison.

These somewhat mixed results with respect to the 2005 survey should be contrasted with the more positive results of the yearly end of thesis survey (75% response rate), reported in the document "The EPFL Doctoral School 2006-2012: transforming tradition".

The overall satisfaction rate of our doctoral graduates is 96% positive in 2011, up from 83% in 2010 and all indicators are on the rise except for that for the teaching experience which is rated as positive by only 72% of the graduates compared with 86% in 2010. This latter statistics confirms the trend identified in the Doctorat II survey. Similarly, the end of thesis survey indicates progress in the quality and variety of doctoral courses but still points to necessary improvements.

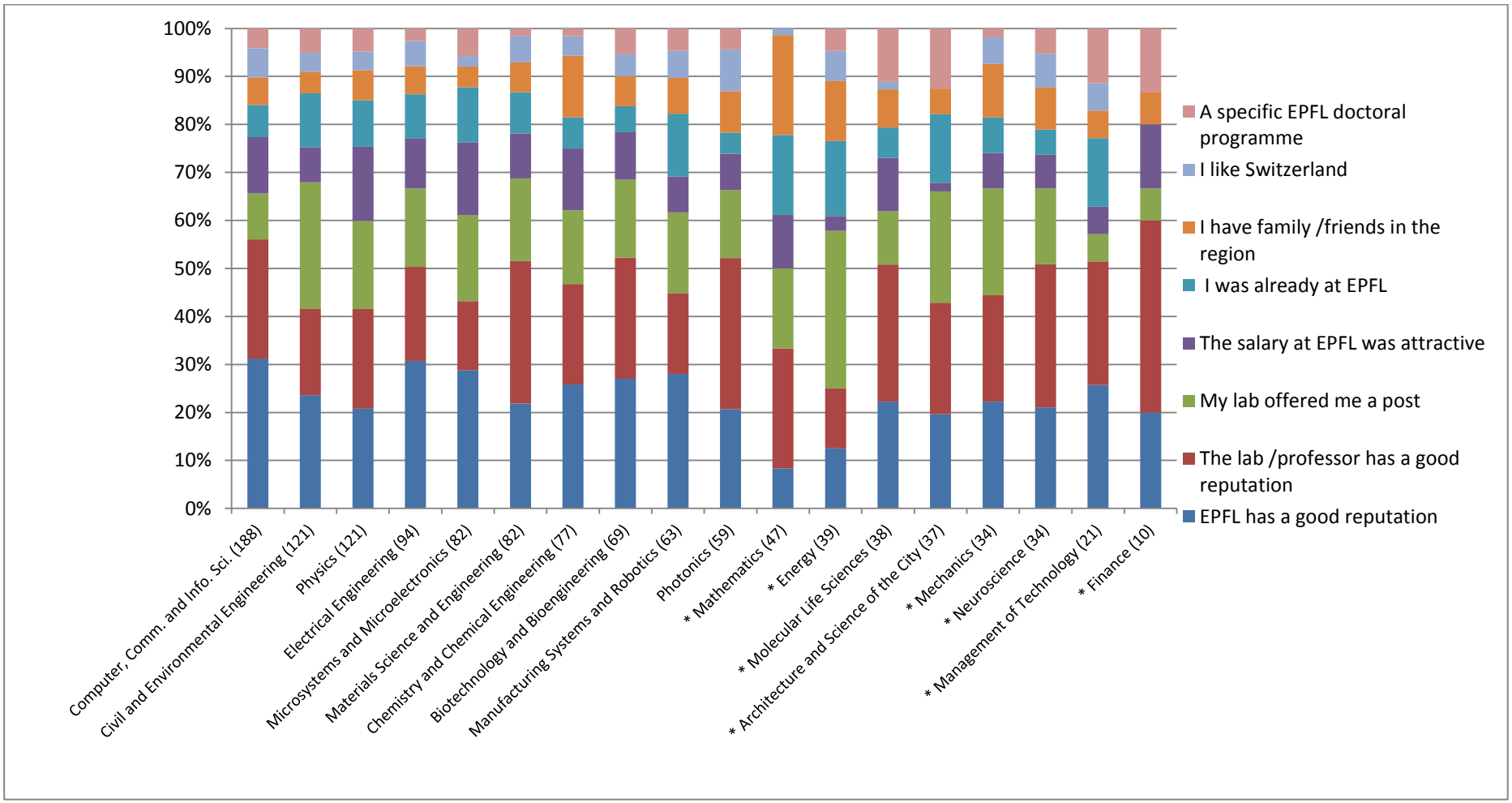
Table 2: Comparison between responses in doctoral surveys 2005 and 2012

Topic evaluated / question	2005	2012
Choosing EPFL		
Chose EPFL because EPFL has a good reputation*	16%	40%
Chose EPFL because of Lab's or Professor's Reputation*	20%	36%
Welcome		
Welcome in laboratory is excellent or quite good	86%	86%
Welcome in doctoral program is excellent or quite good	79%	70%
Work load distribution		
Time spent doing research	59%	64%
Time spent for own training	15%	10%
Time spent teaching	12%	15%
Teaching		
PhD students not teaching at all	22%	24%
Teaching seen as a positive experience*	74%	62%
PhD students feeling well prepared for teaching	47%	80%
Quality of environment and research conditions		
Very satisfied or satisfied	90%	85%
Supervision		
PhD students seeing their thesis director < 1/month	23%	22%
See scientific guidance as excellent or good(2005)/useful or very useful (2012)*	73%	90%
Training Activities		
Seeing courses taken/available as relevant for research interests/ thesis *	60%	53%
See courses as of good/ high quality*	79%	87%
Career		
Doctoral graduates wanting to stay in Switzerland	40%	51%
Doctoral graduates wanting to leave	17%	12%
Doctoral graduates wanting to start their own company	36%	18%

Note: an asterisk (*) denotes those question which are less directly comparable due to changes in the phrasing of the question or answers

Appendix I – Further analysis

Chart A: Most common listed principal reasons for choosing EPFL, by Doctoral Programme



Note: Programmes are listed in order of number of respondents, which is listed in brackets. Smaller programmes (less than 50 respondents) are marked with an asterisk. Care should be exercised in analysing a breakdown by doctoral programme since, for programmes with relatively small numbers of respondents, a small change in absolute number could be mistakenly seen to be a major change.

Chart B: Most common listed principal reasons for choosing EPFL, by Status of Thesis Director

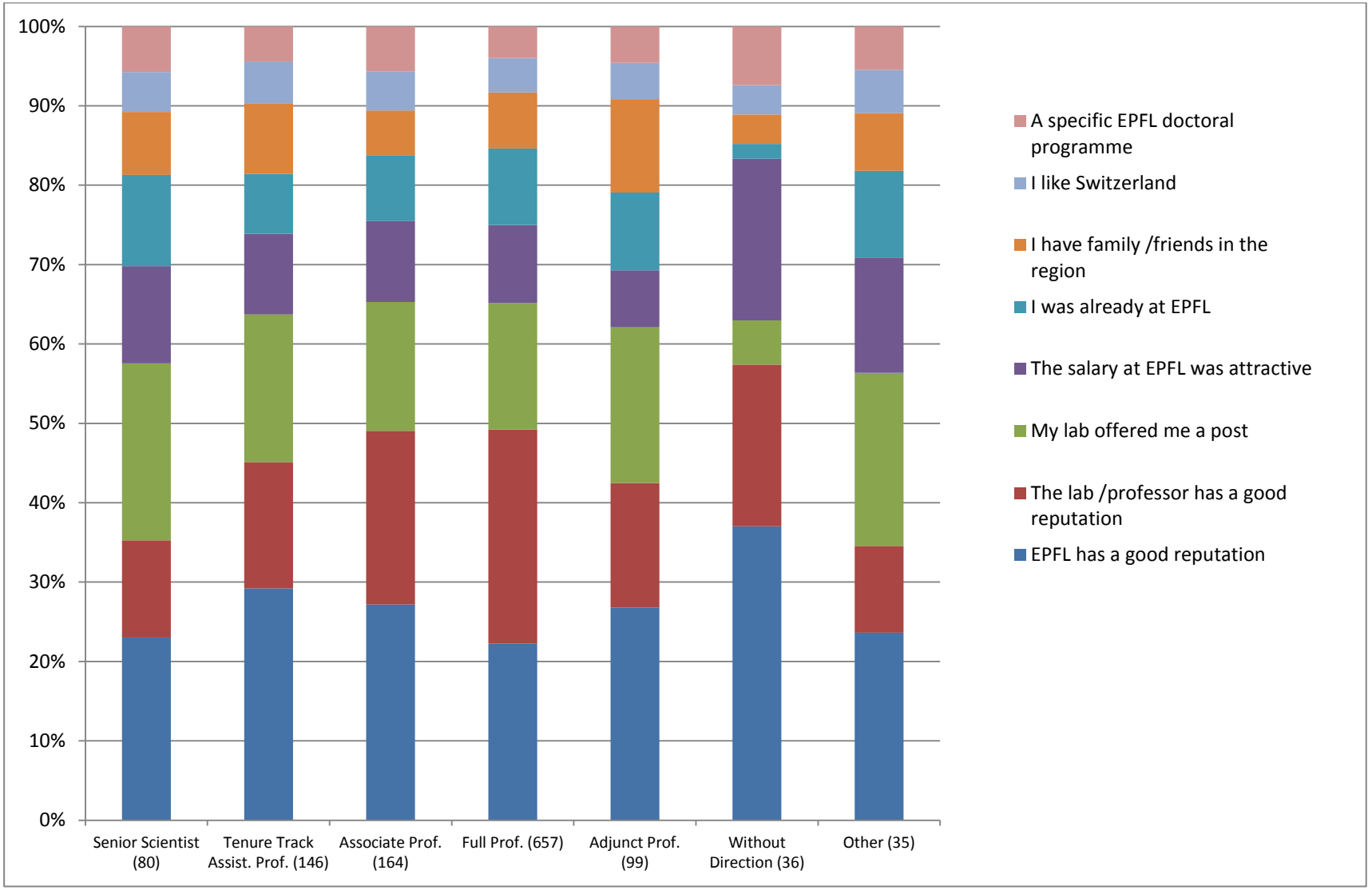
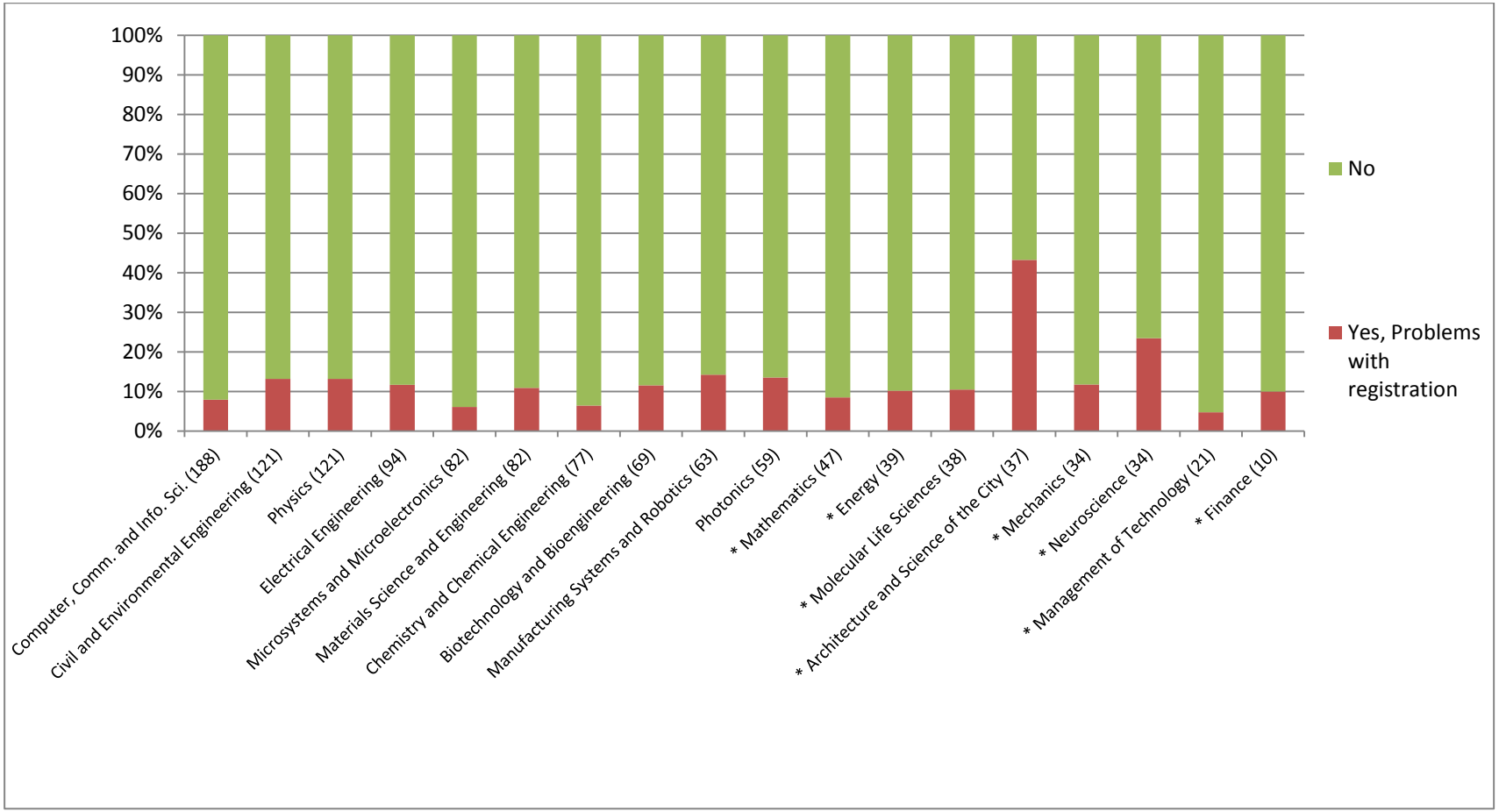
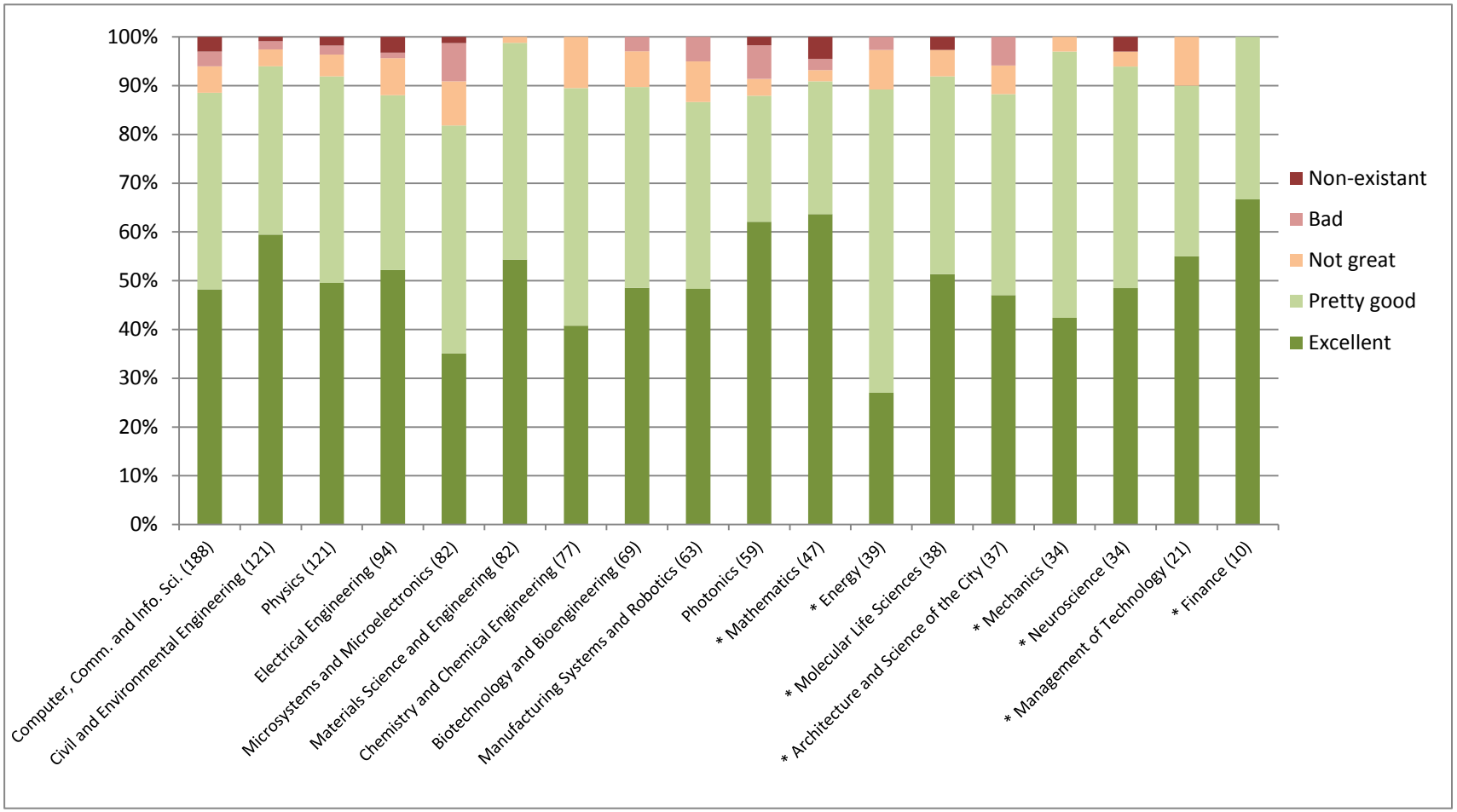


Chart C: Did they experience problems with EPFL admission procedures analysed by Doctoral programme



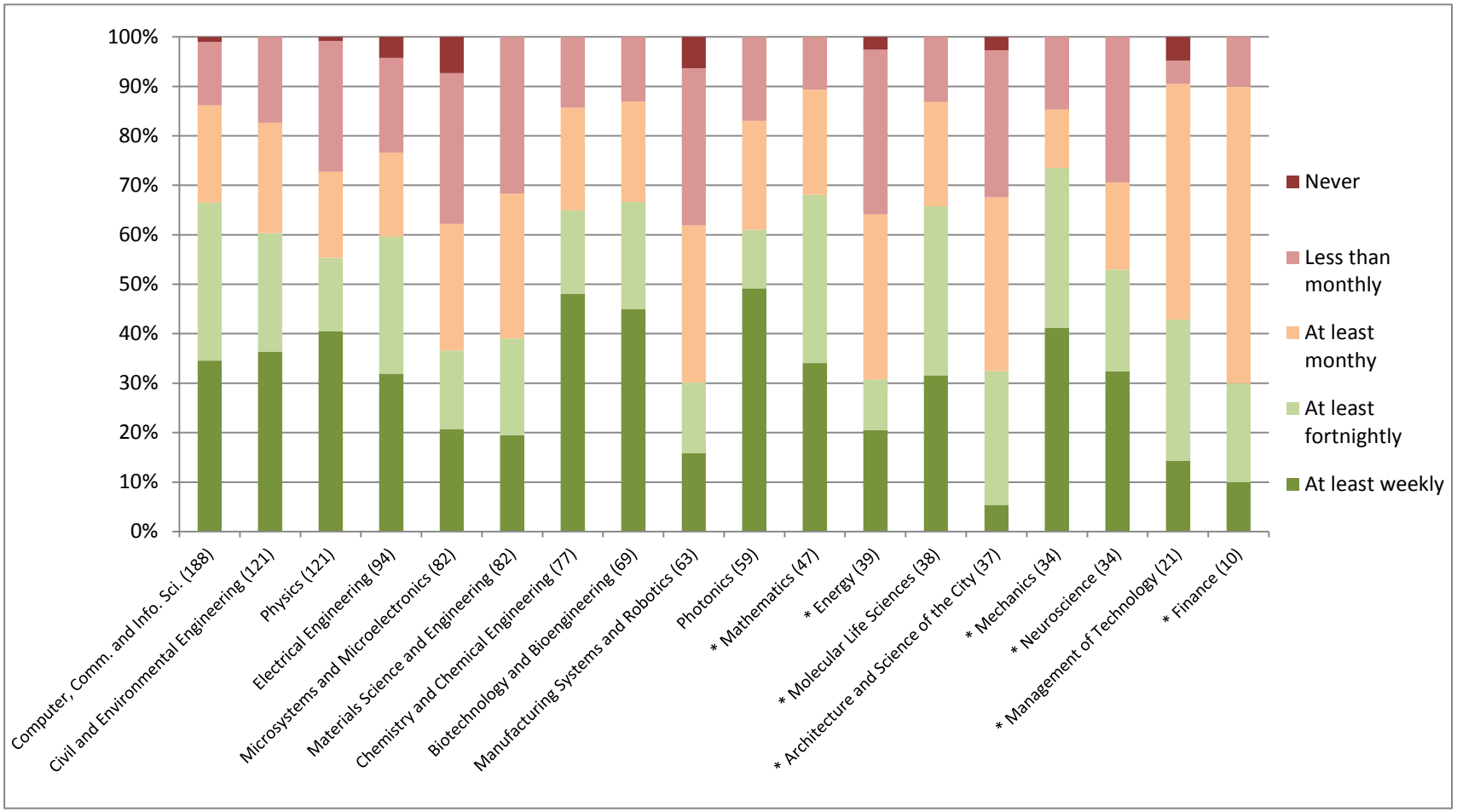
Note: Association not found to be significant. Only larger programmes are taken into account when calculating significance.

Chart D: Welcome they experienced from the Doctoral programme



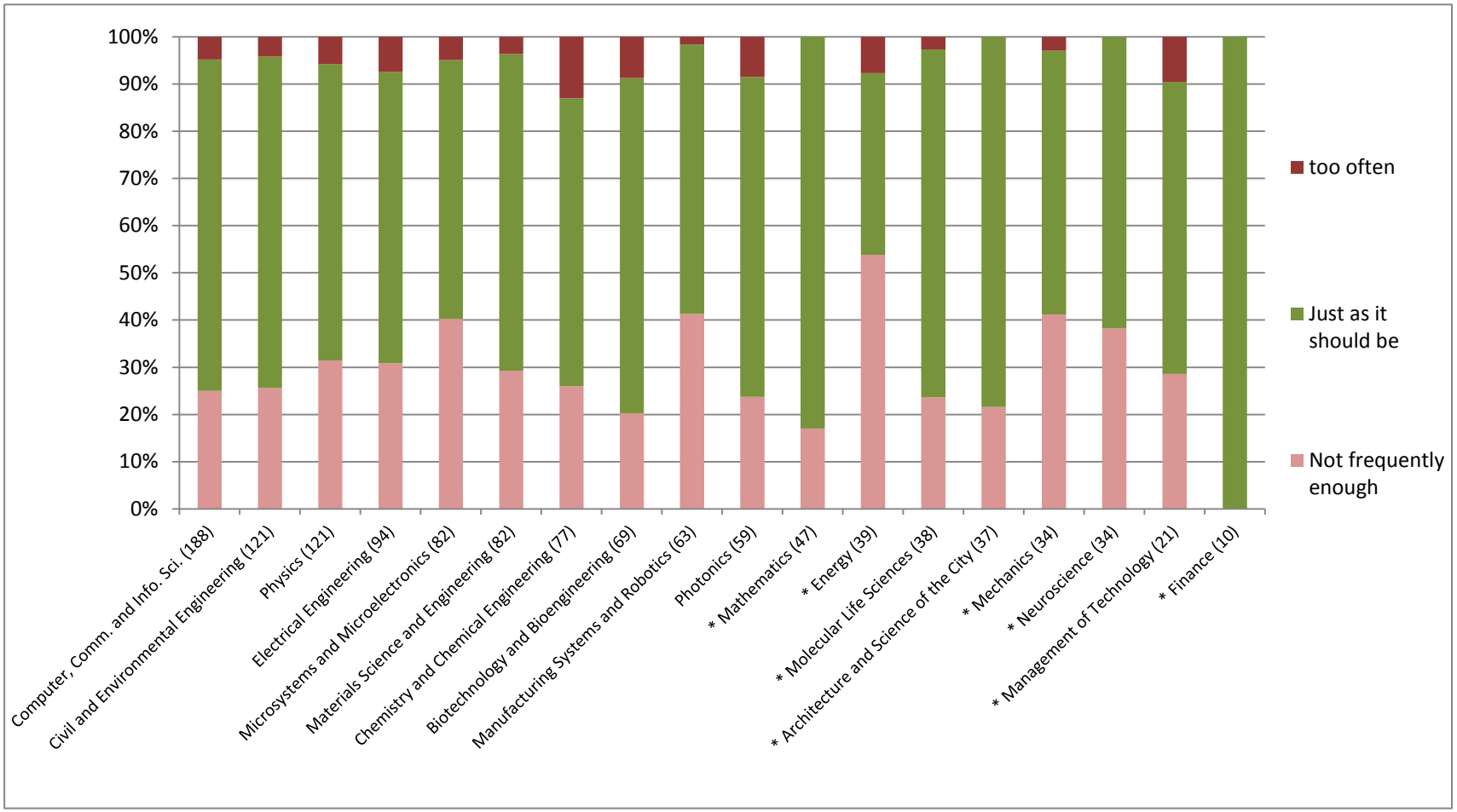
Note: Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account in calculating significance.

Chart E: Frequency with which they receive scientific advice from thesis director, by Doctoral programme



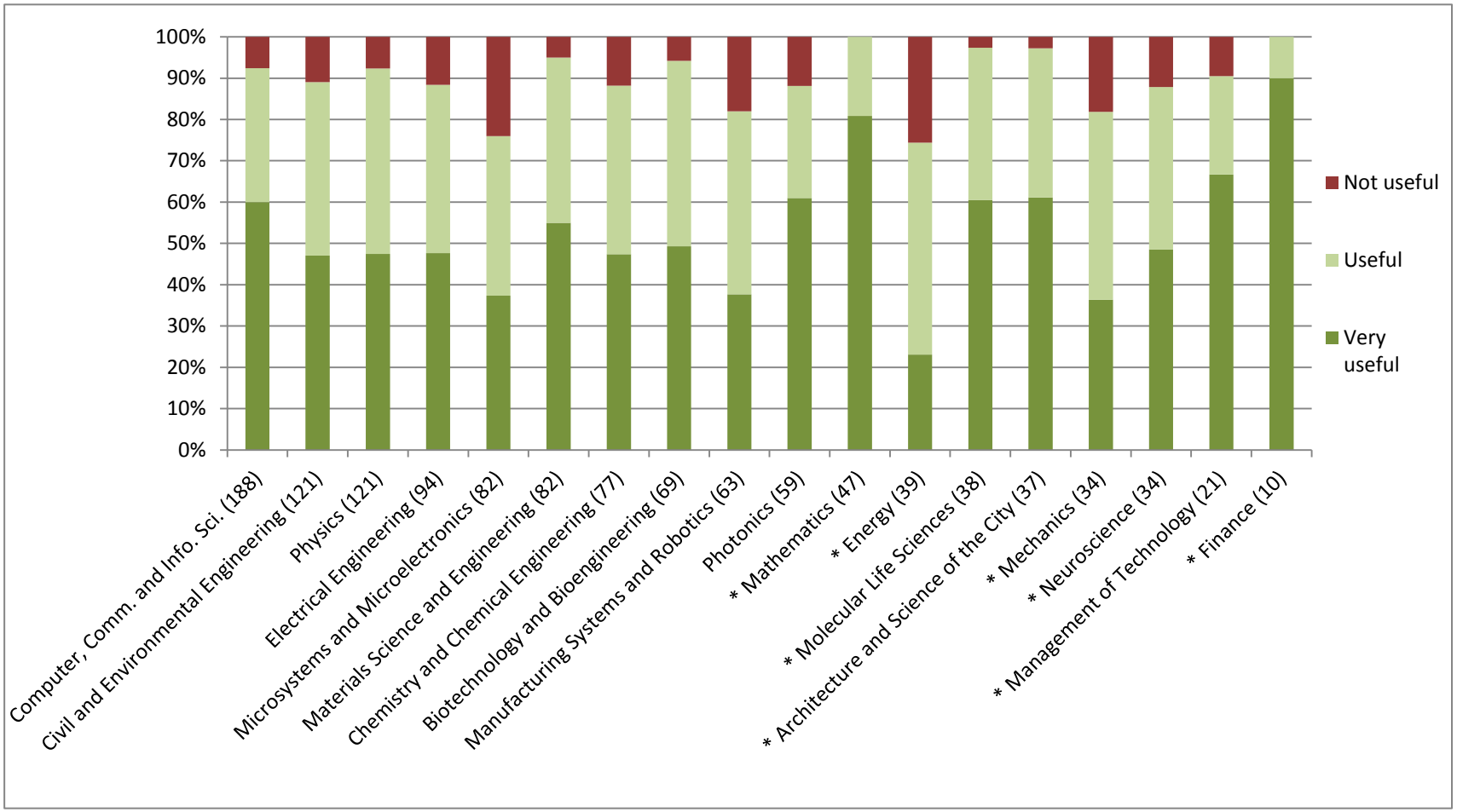
Note: Association is found to be statistically significant using chi-square ($p<0.001$). "Never" response and smaller programmes were removed for purposes of calculating significance.

Chart F: Appropriateness of frequency with which they receive scientific advice from thesis director, by Doctoral programme



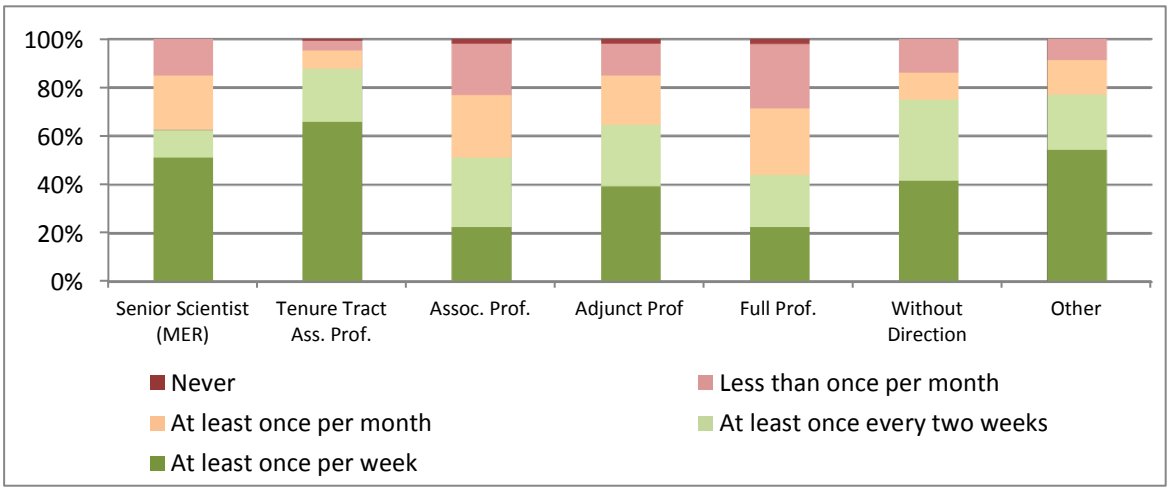
Note: Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account in calculating significance.

Chart G: Estimation of utility of scientific advice from thesis director, by Doctoral programme



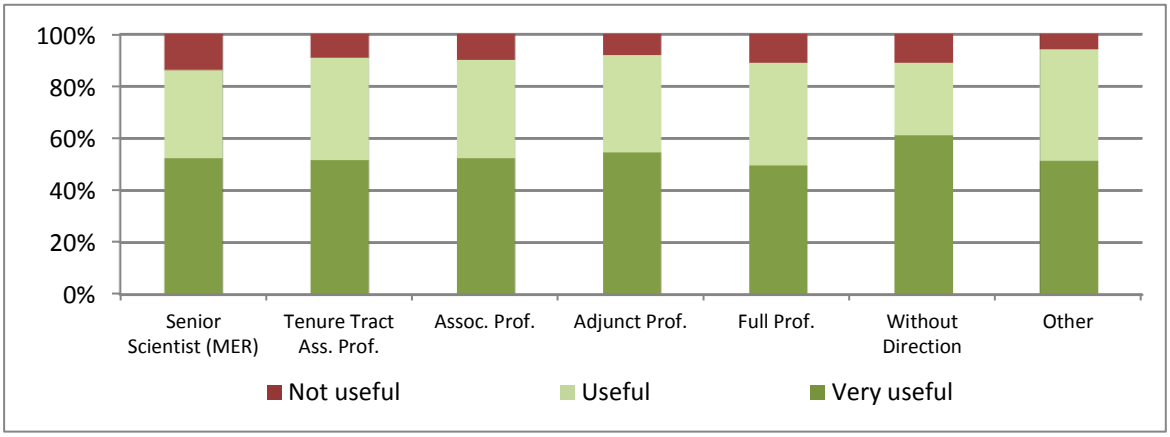
Note: Association is found to be statistically significant using chi-square (p=0.002). Only larger programmes are taken into account in calculating significance. 31 respondents who say the question as not relevant not included.

Chart H: Frequency with which they saw their thesis director, by status of director



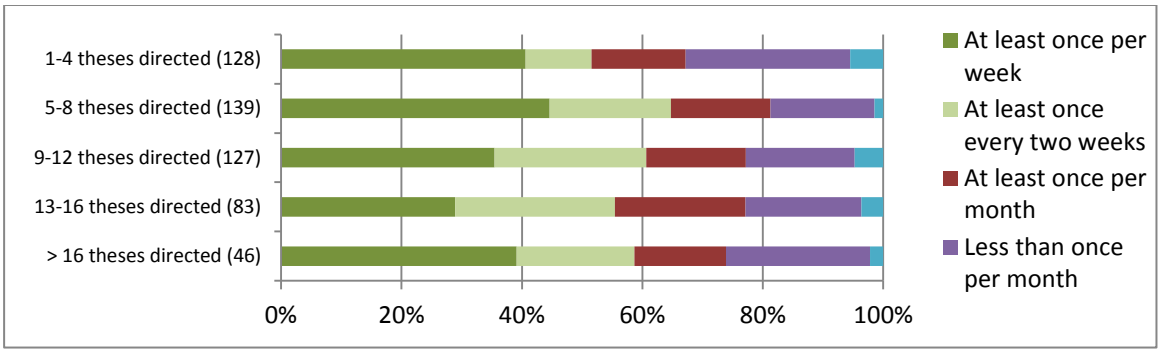
Note: Association is found to be statistically significant using chi-square ($p<0.001$).

Chart I: Utility of advice from thesis director, by status of director



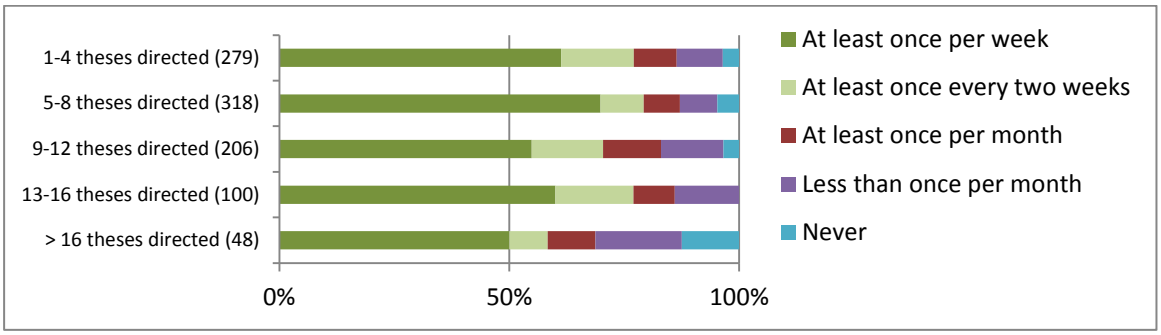
Note: There is no significant relationship between status of thesis director and utility of advice. Chart is provided for purposes of comparison with Chart H, above.

Chart J: How often do you meet thesis co-director, classified by number of students supervised by thesis director?



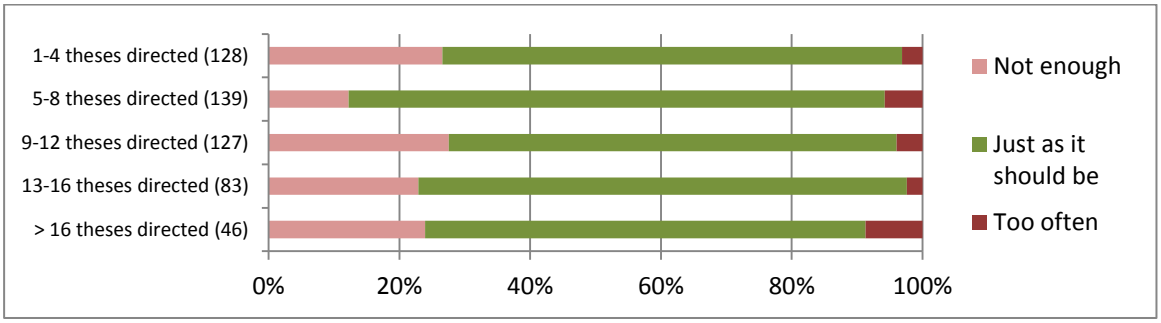
Note: Association is not found to be statistically significant. Based on responses from 523 respondents who identified the question on "co-direction" as relevant.

Chart K: How often do you meet other team members in your lab, classified by number of students supervised by thesis director



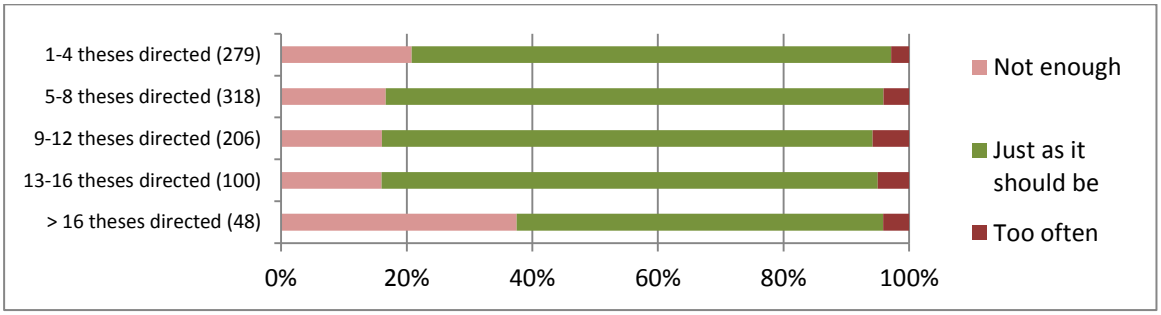
Note, Association is found to be statistically significant using chi-square (p=0.002) but no particular pattern is evident. The chart is based on responses from 951 respondents that identified the question on "other lab team members" as relevant.

Chart L: How do you rate the frequency of scientific advice from thesis co-director, classified by number of students supervised by doctoral director



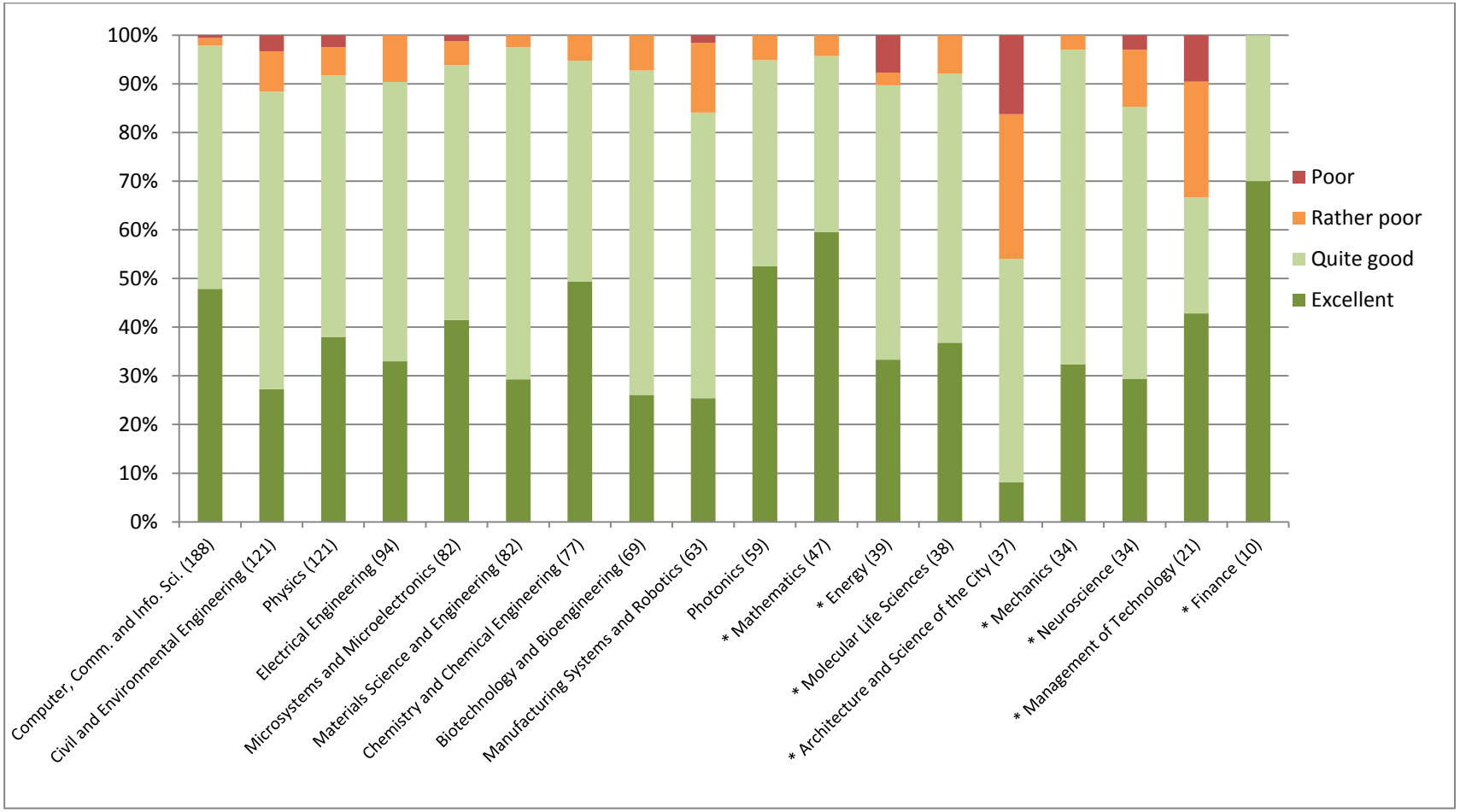
Note: Association not found to be statistically significant. The chart is based on responses from 523 respondents who identified the question on "co-direction" as relevant.

Chart M: How do you rate the frequency of scientific advice from other team members in your lab, classified by number of students supervised by doctoral director



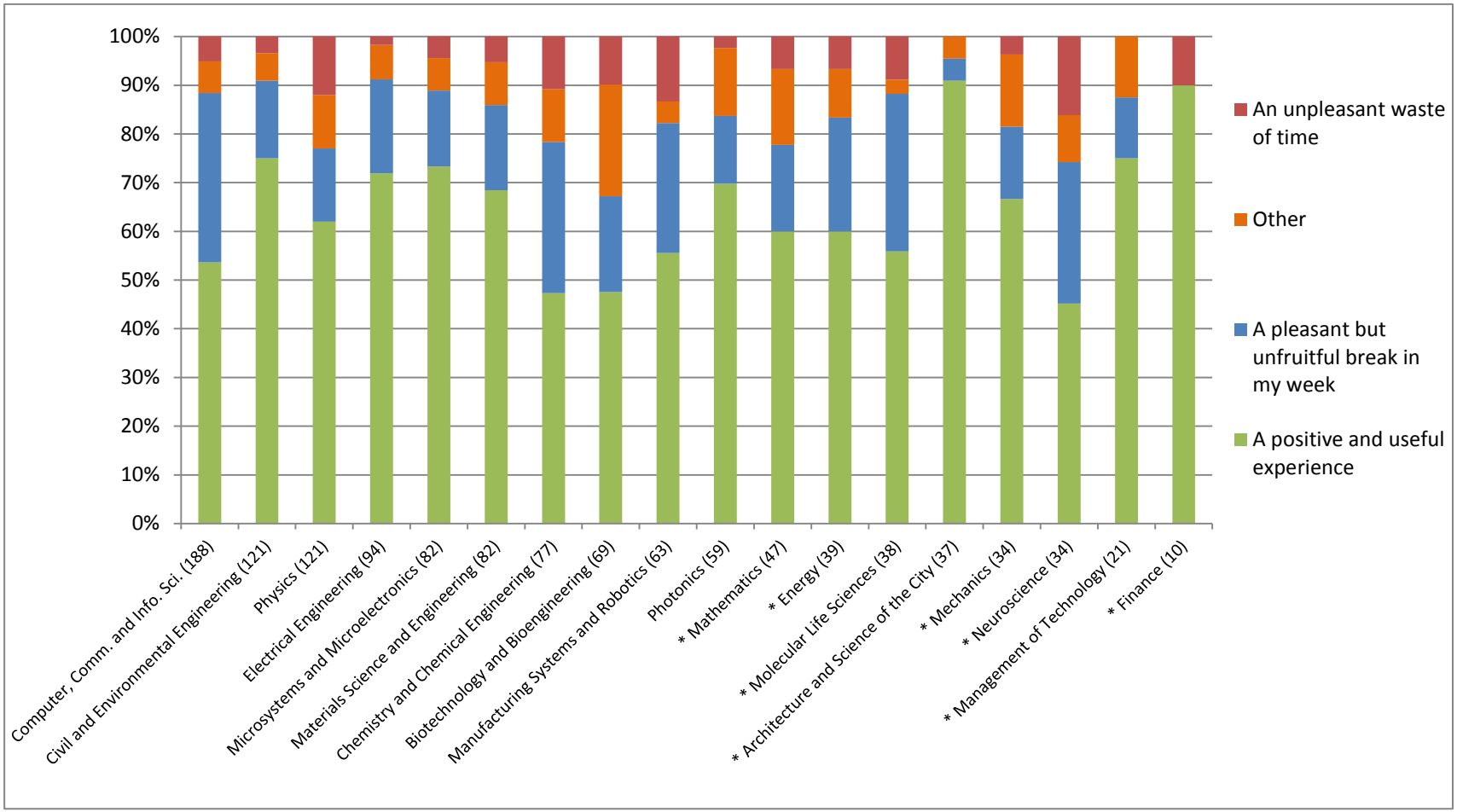
Note: Association is found to be statistically significant using chi-square (p=0.033). The chart is based on responses from 951 respondents who identified the question on "other lab team members" as relevant

Chart N: Estimation of quality of administrative support, by Doctoral programme



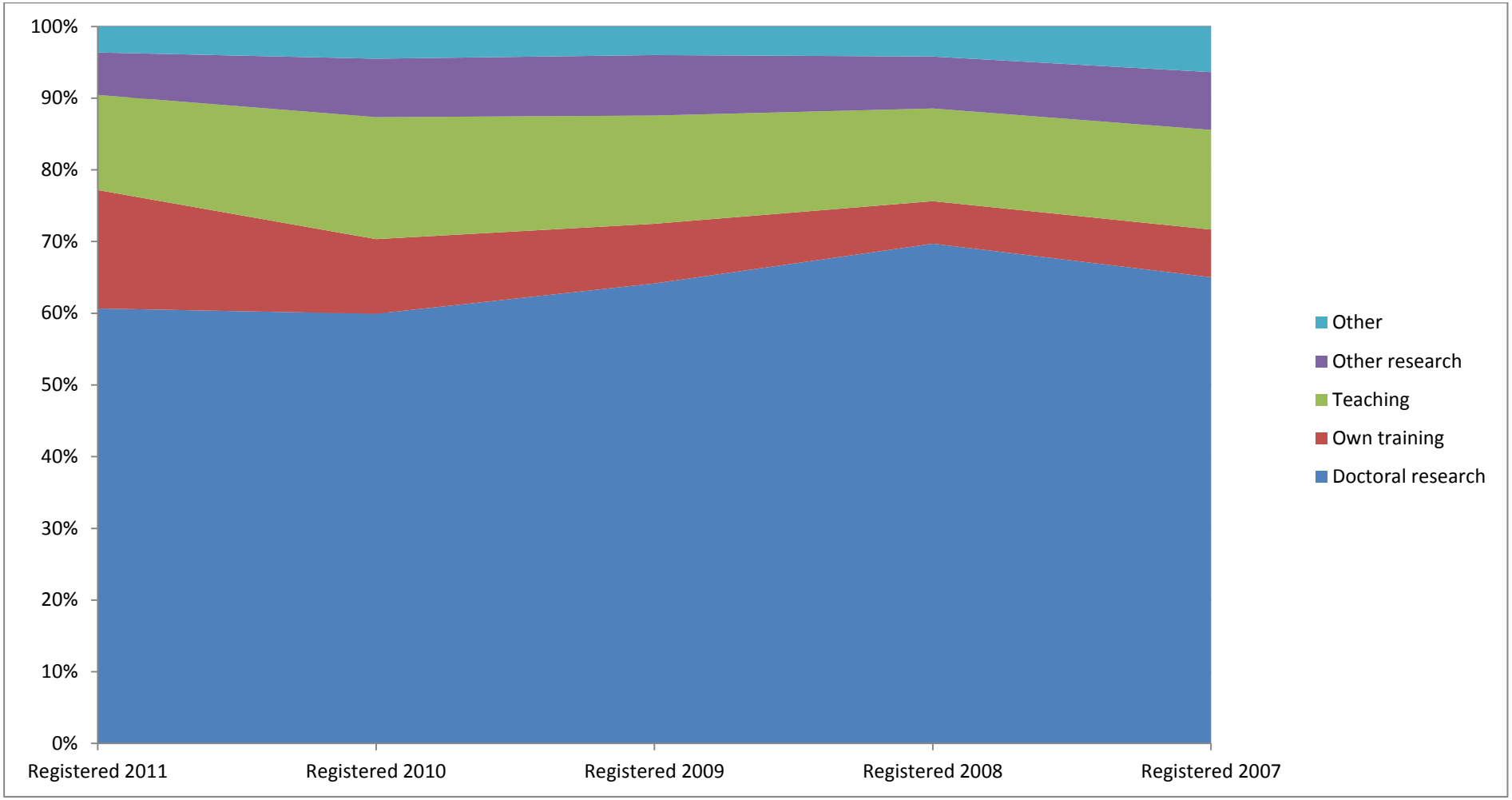
Note: The question asked them to rate the quality of the "the administrative support you receive in your studies and research." It did not specify administrative support in the lab, in the doctoral programme, doctoral school or EPFL in general. Therefore we cannot assume what administrative support their ratings refer to. Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account in calculating significance.

Chart O: Rating of teaching activity, by Doctoral programme



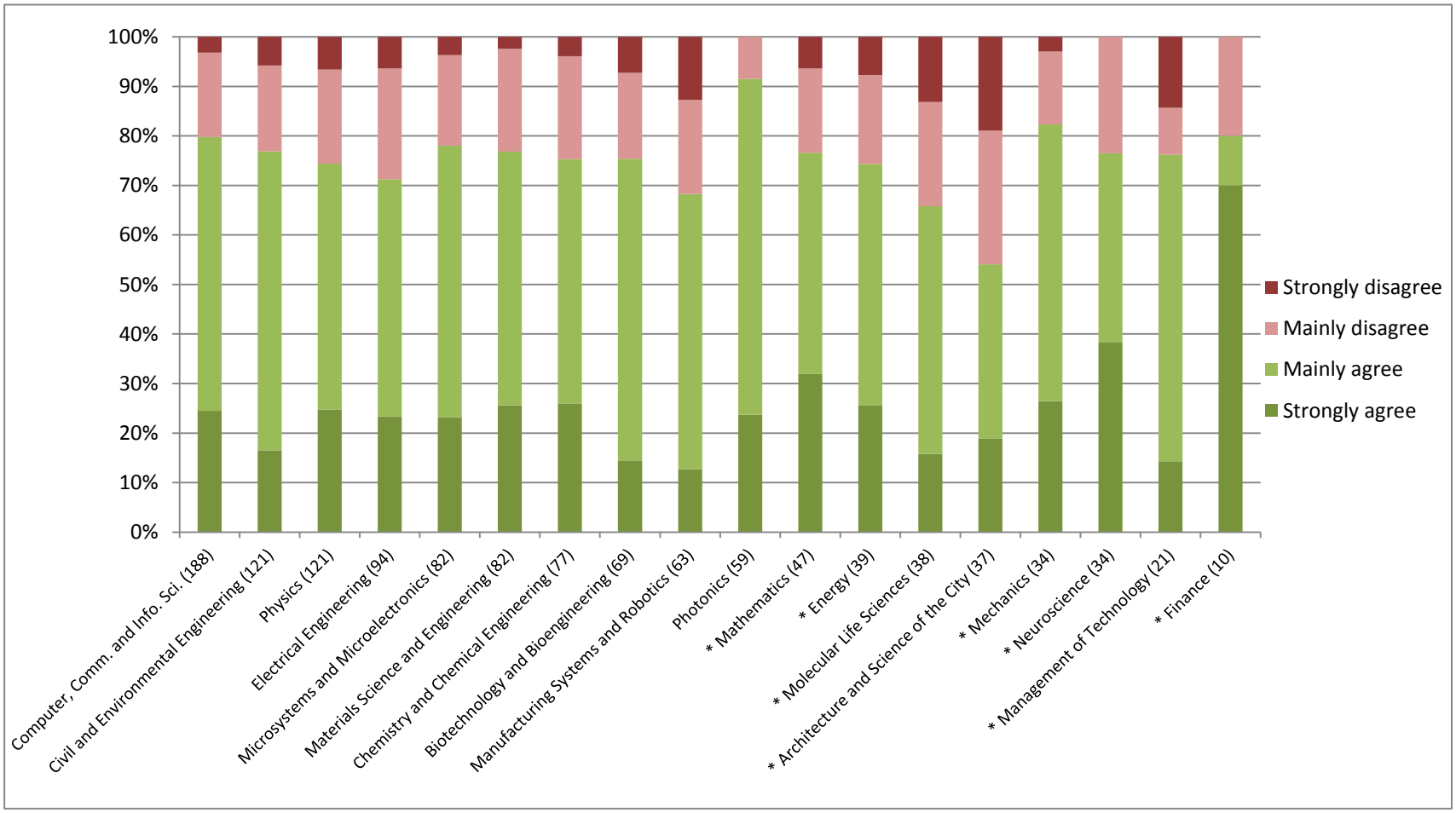
Note: Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account in calculating significance. The question was answered by 924 respondents who reported participating in teaching.

Chart P: Average % of time spent on different tasks in an average working week last semester, by date of matriculation



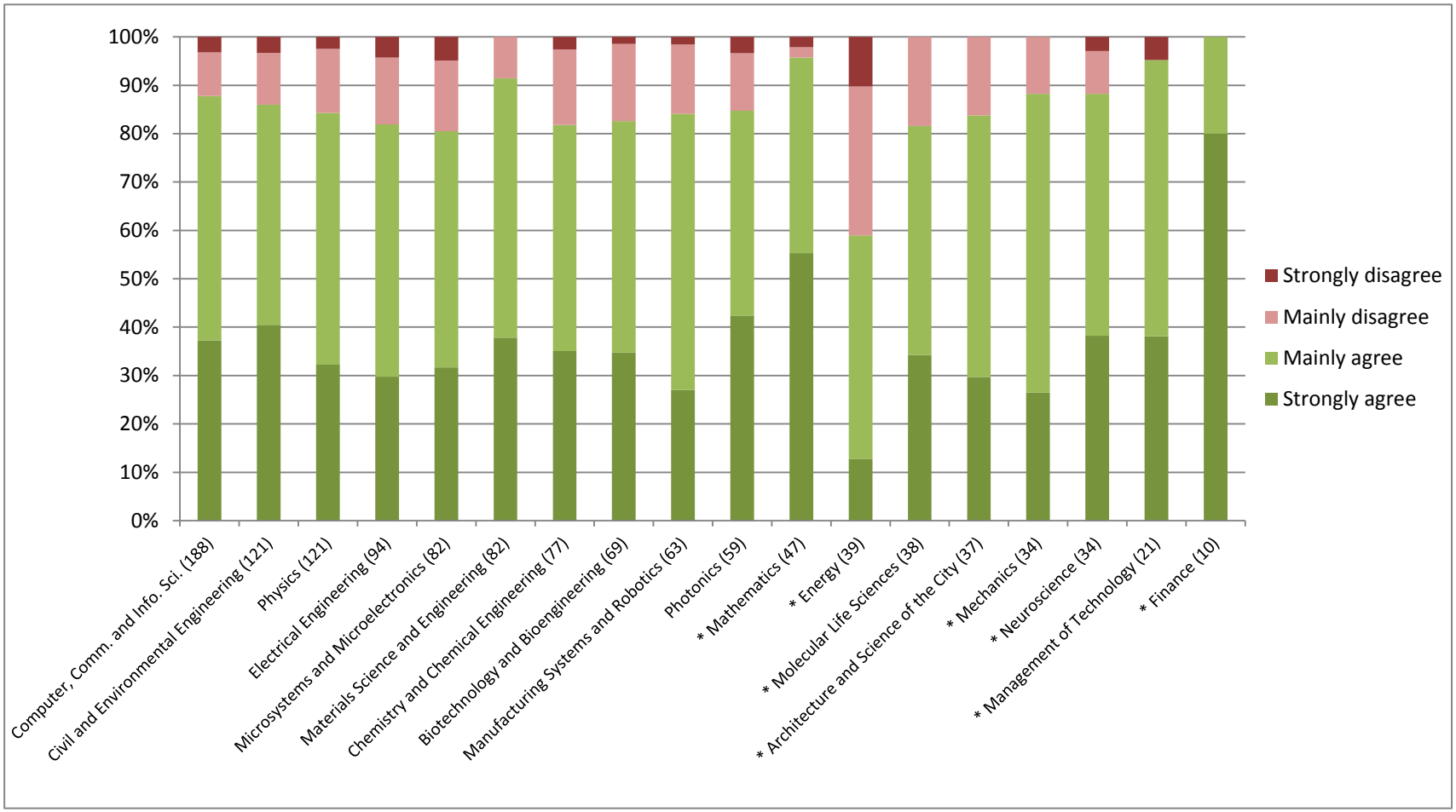
Note: 908 respondents who reported participating in teaching and who matriculated in these years included.

Chart Q: Agreement with statement, “I receive clear and complete information from Human Resources with regard to my employment conditions”, by Doctoral programme



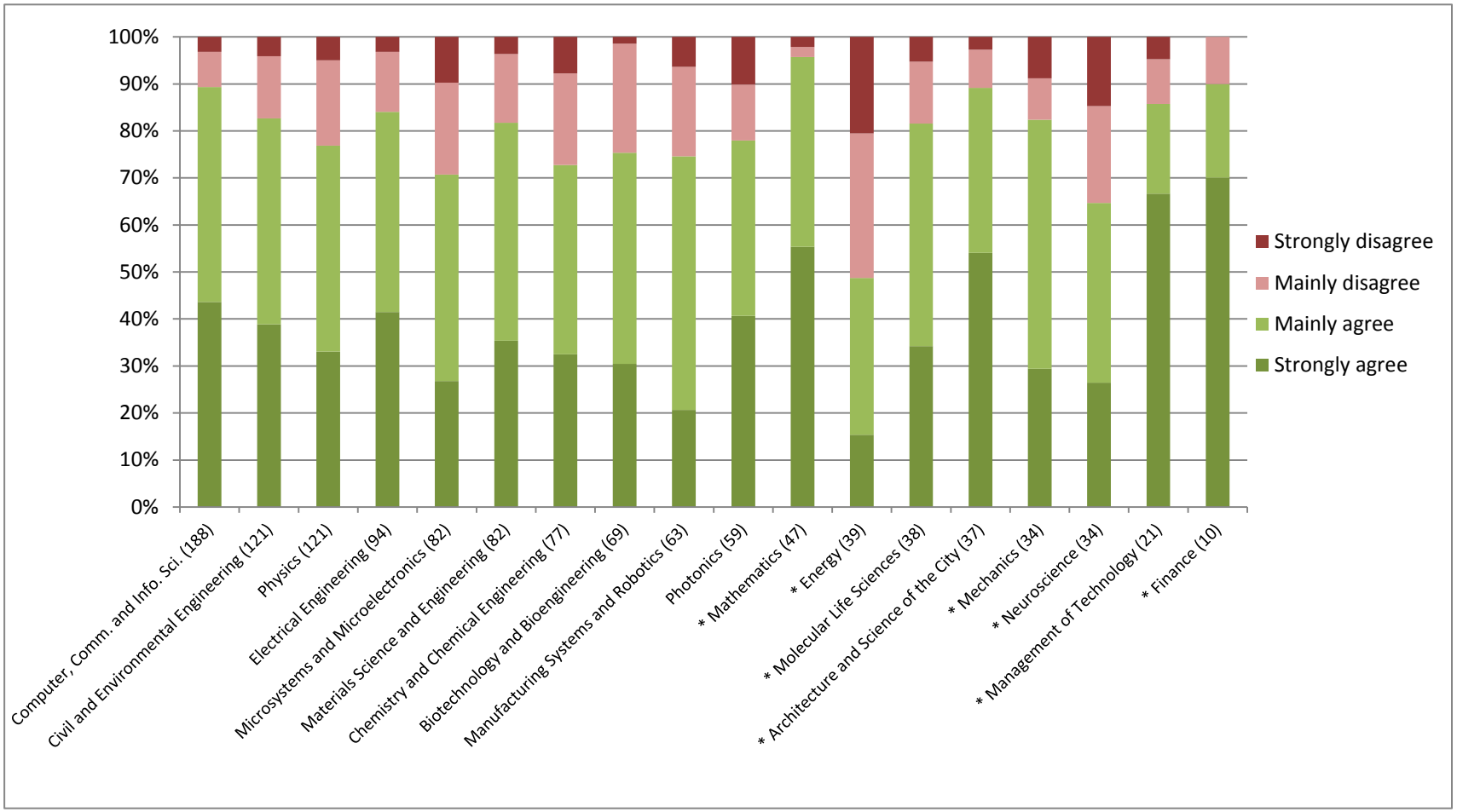
Note: Association not found to be statistically significant. Only larger programmes are taken into account in calculating significance.

Chart R: Agreement with statement, “Overall I am satisfied with the conditions under which I am conducting my thesis research”, by Doctoral programme



Note: Association not found to be statistically significant. Only larger programmes are taken into account in calculating significance.

Chart S: Agreement with statement, “There’s a real spirit of listening and dialogue between me and my thesis director”, by Doctoral programme

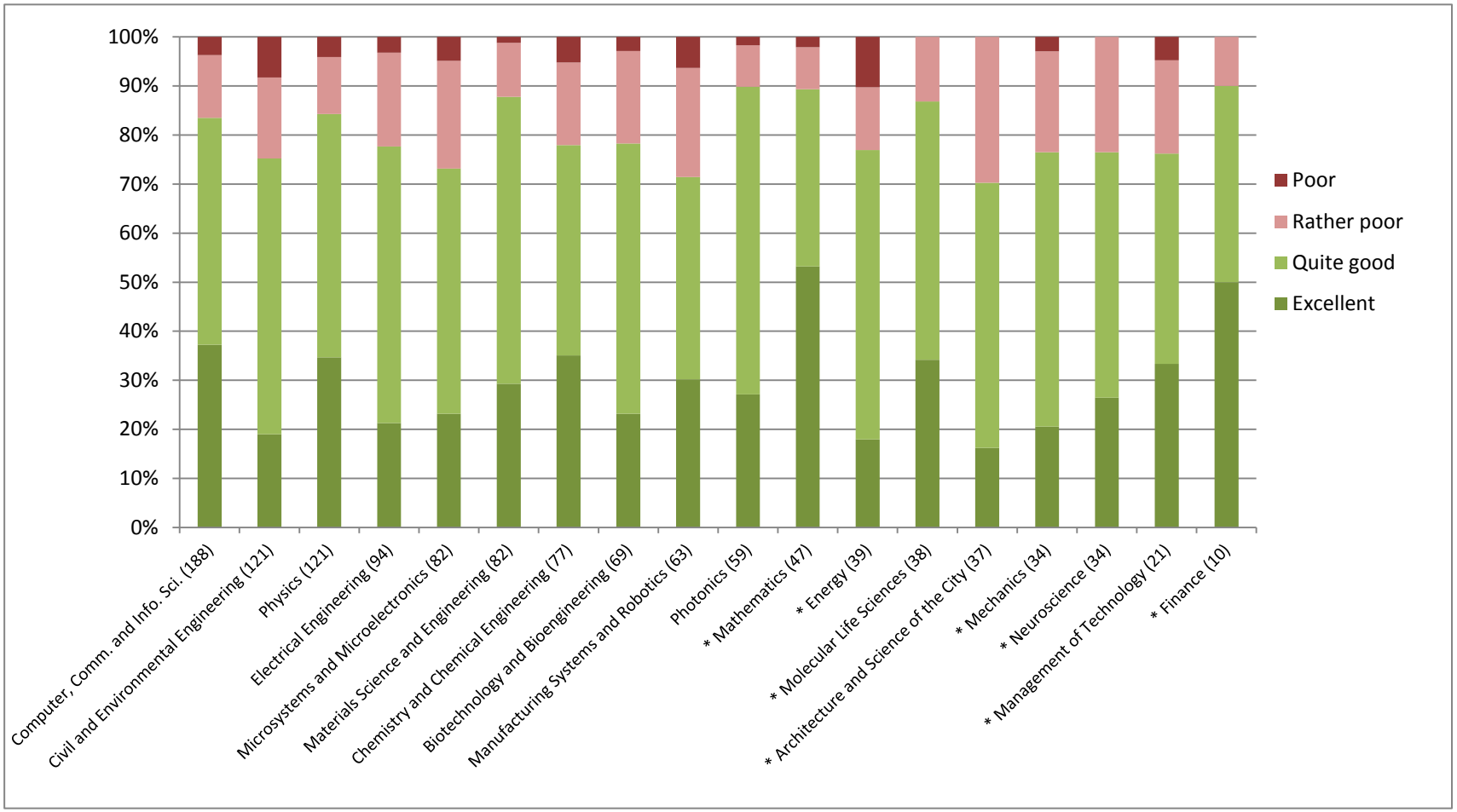


Note: Association is found to be statistically significant using chi-square (p=0.037). Only larger programmes are taken into account in calculating significance.

Table A: Percentage of respondents answering “Strongly Agree” or “Agree” to question on the range and quality of scientific doctoral-level courses

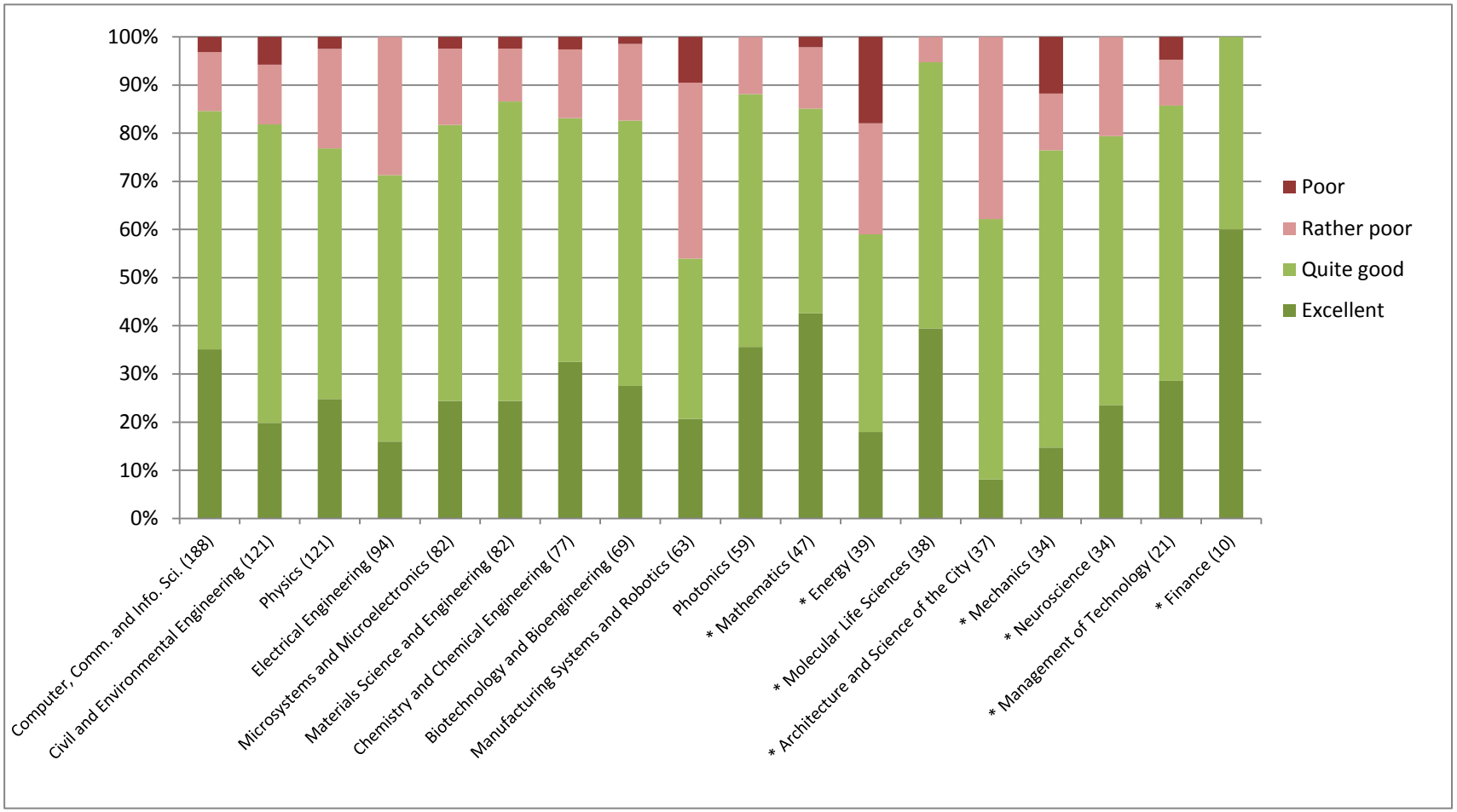
	* Architecture and Science of the City	Biotechnology and Bioeng.	Civil and Environmental Engineering	Chemistry and Chemical Engineering	Electrical Engineering	* Energy	* Finance	Computer, Communic. and Info. Sci.	* Mathematics	* Mechanics	Microsystems and Microelec.	* Molecular Life Sciences	* Management of Technology	Material Science and Engineering	* Neuroscience	Photonics	Manufacturing Systems and Robotics	Physics
I can find enough courses relevant to my research interests	32	68	49	56	57	44	80	55	47	47	54.9	61	38	45	47	70	43	53
I can be sure I will be able to take the courses I plan to take (not cancelled /postponed)	84	87	75	91	79	77	100	84	85	79	80.5	87	71	83	91	76	83	82
In general, the courses I take are of good quality (teaching, content)	73	94	87	88	79	74	100	89	98	94	80.5	87	91	89	91	88	83	87
There is a good choice of courses organized outside EPFL (including EPFL partners)	57	44	42	34	32	41	70	18	36	24	42	60.5	81	49	47	41	21	50

Chart T: Rating of doctoral programme as a scientific community in terms of access to external seminars, workshops and summer schools



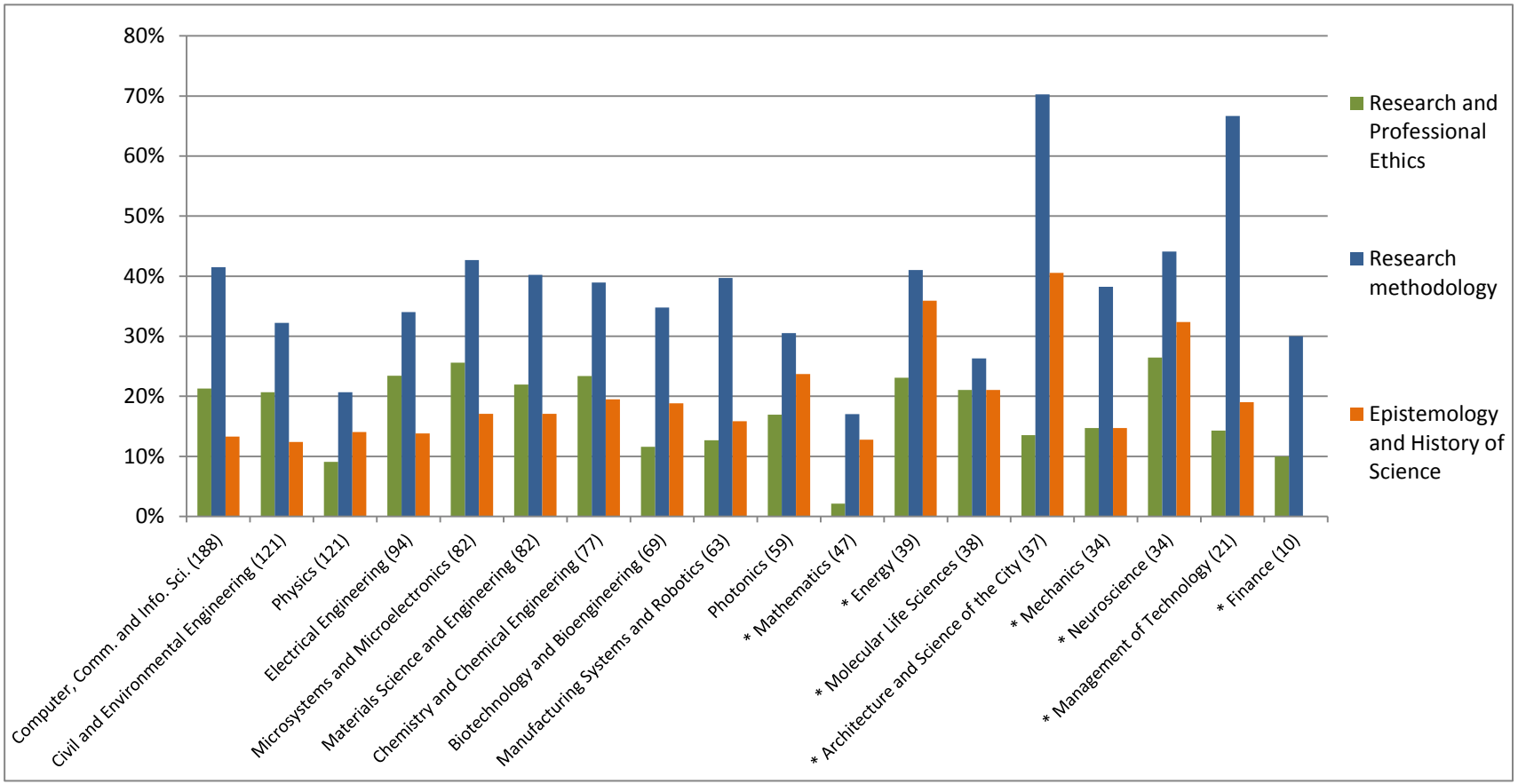
Note: Association is found to be statistically significant using chi-square (p=0.041). Only larger programmes are taken into account in calculating significance.

Chart U: Rating of doctoral programme as a scientific community in terms of internal research events (poster sessions, conferences, workshops)



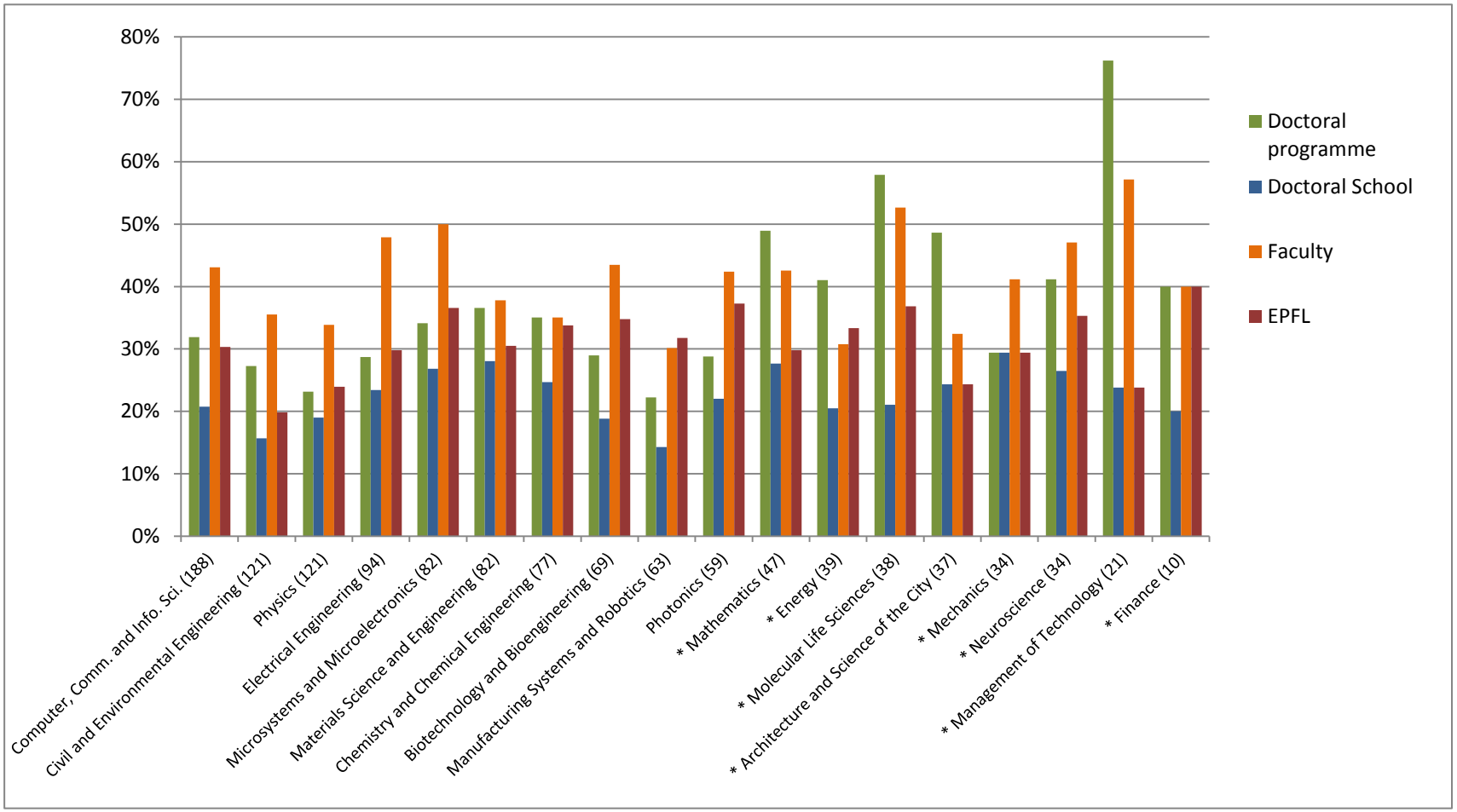
Note: Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account in calculating significance.

Chart V: Percentage responding “very interested” when asked about different types of courses, by doctoral programme



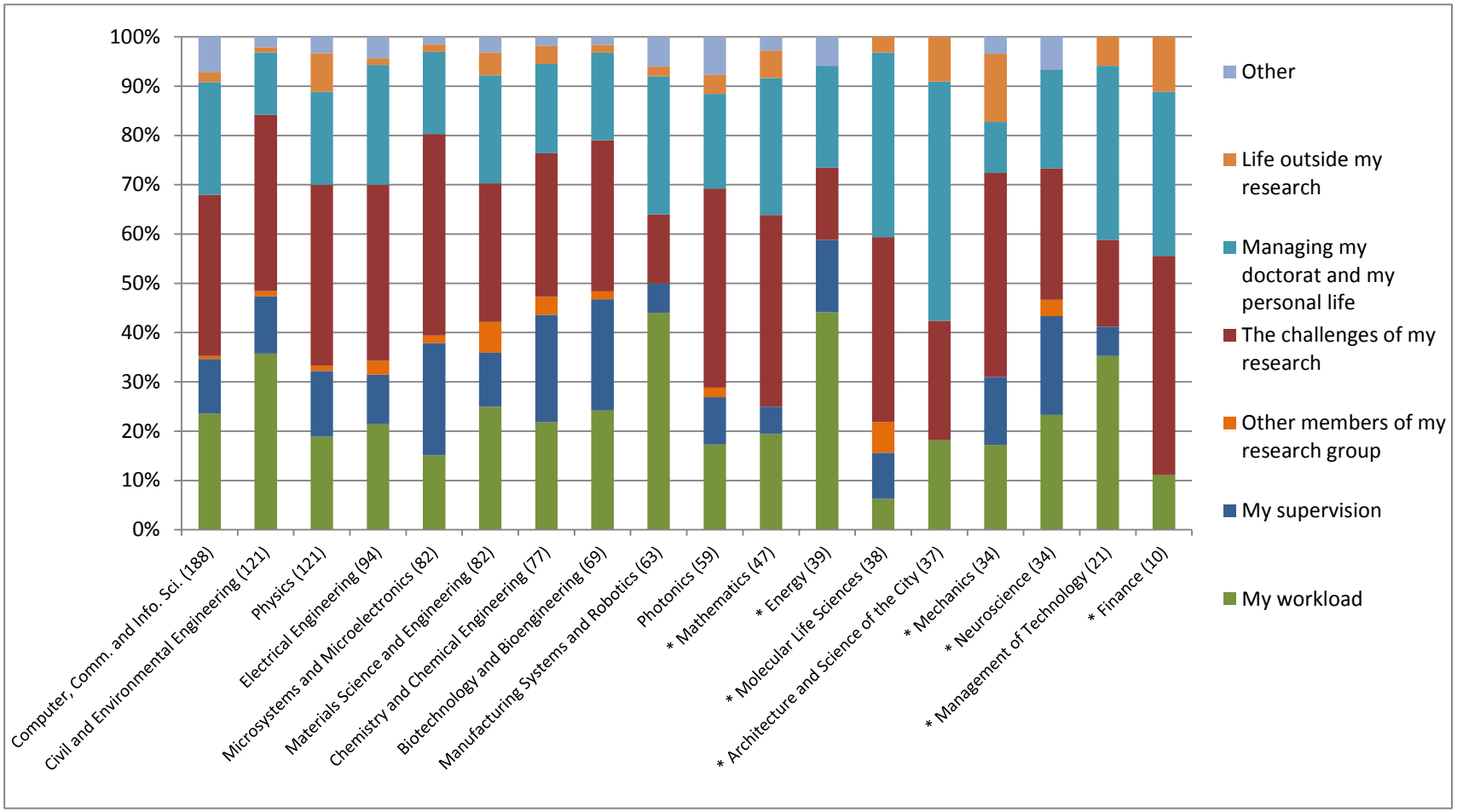
Note: Association between doctoral programme and interest in “research and professional ethics” (p=0.009) and “research methodology” (p=0.002) was found to be statistically significant using chi-square. Only larger programmes are taken into account in calculating significance.

Chart W: Agreement that they feel adequately represented in a range of forums, by doctoral programme



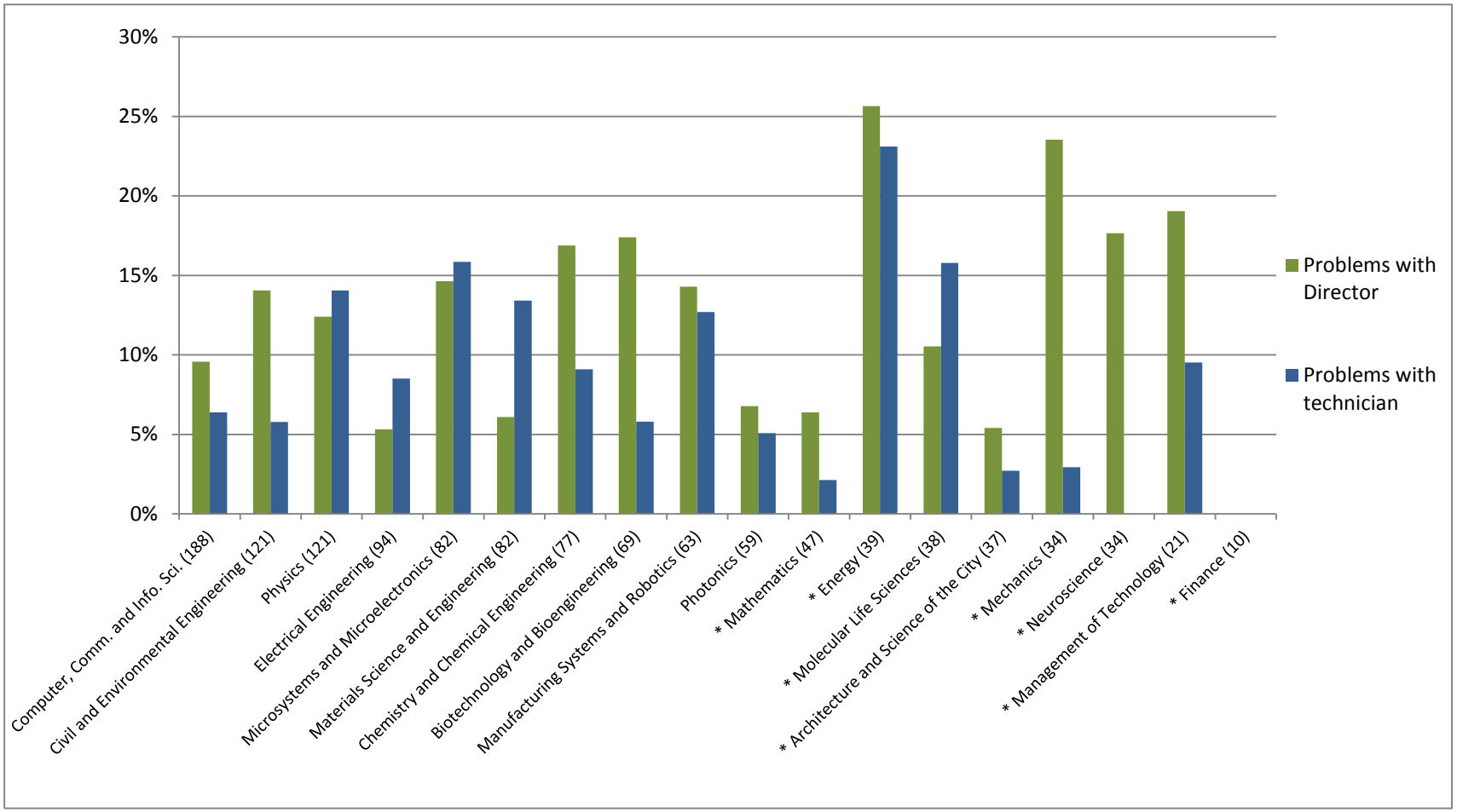
Note: Association between doctoral programme and sense of being represented is not found to be statistically significant. Only larger programmes are taken into account in calculating significance.

Chart X: Cause of most stress in life right now, by doctoral programme



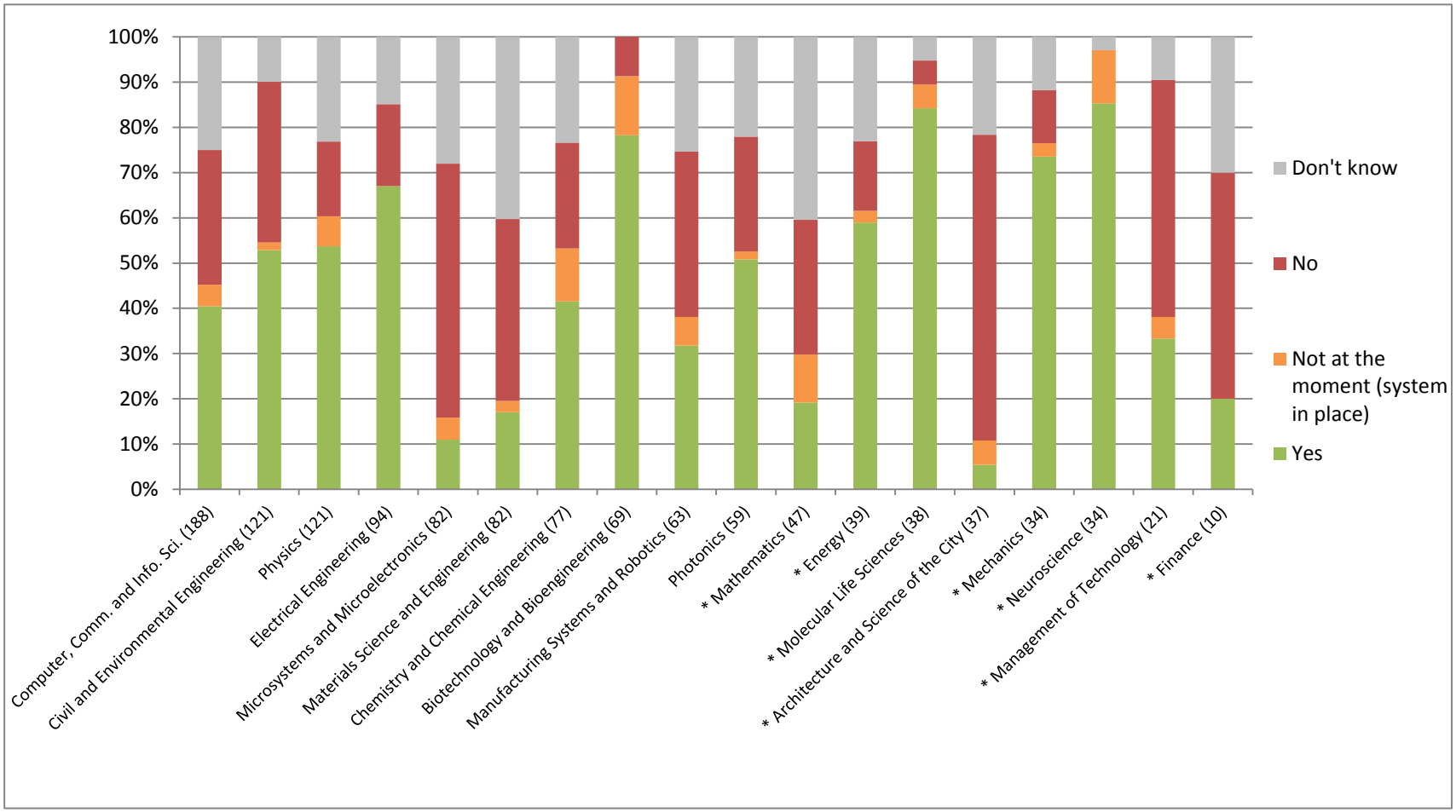
Note: Association is found to be statistically significant using chi-square (p=0.011). Only larger programmes are taken into account and “other” “life outside my research” and “other members of my research group” removed for purposes of calculating significance as they have comparatively few responses.

Chart Y: Reports of having problems with thesis director or technicians, by doctoral programme



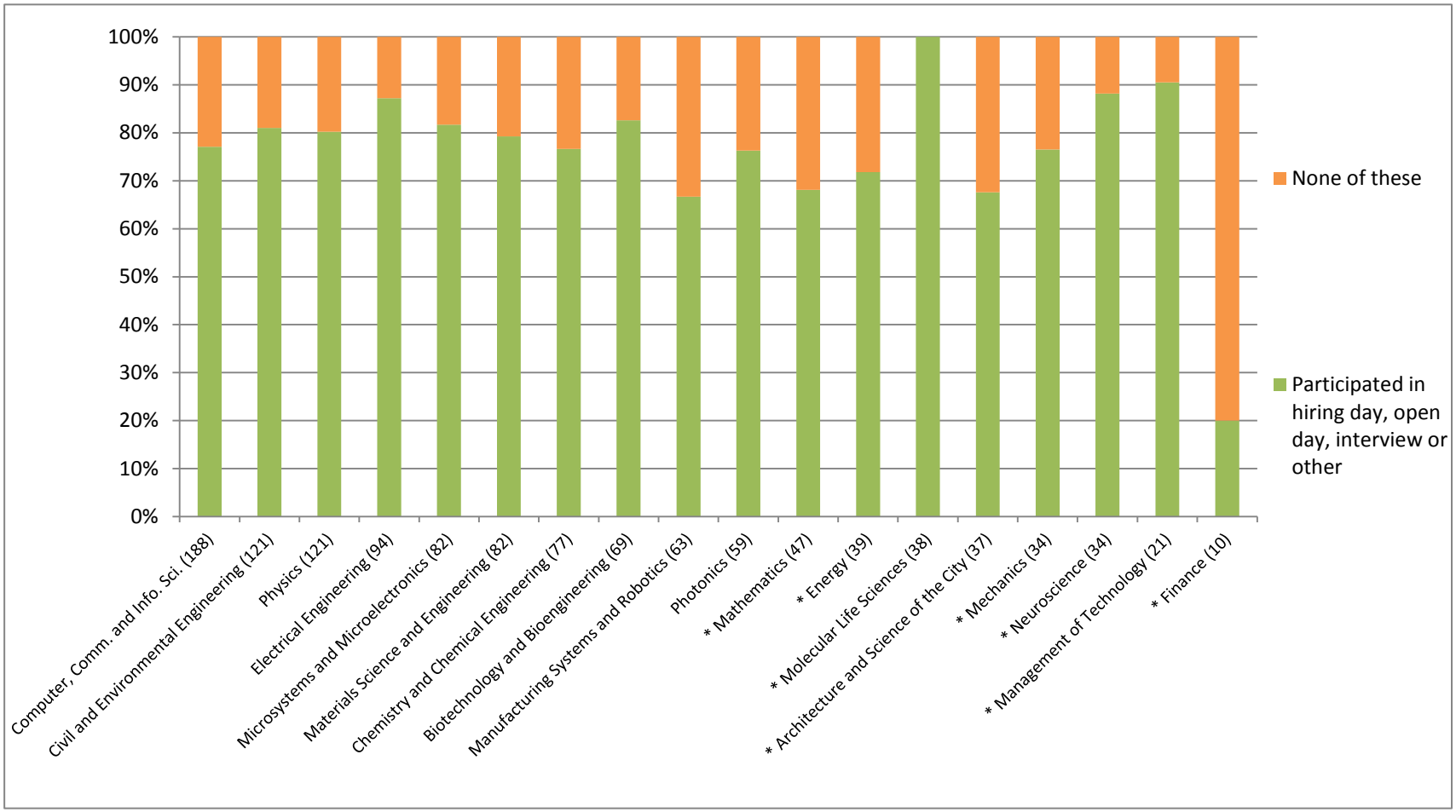
Note: Association is not found to be statistically significant. Only larger programmes are taken into account in calculating significance.

Chart Z: Do they have a designated mentor in their programme, by doctoral programme



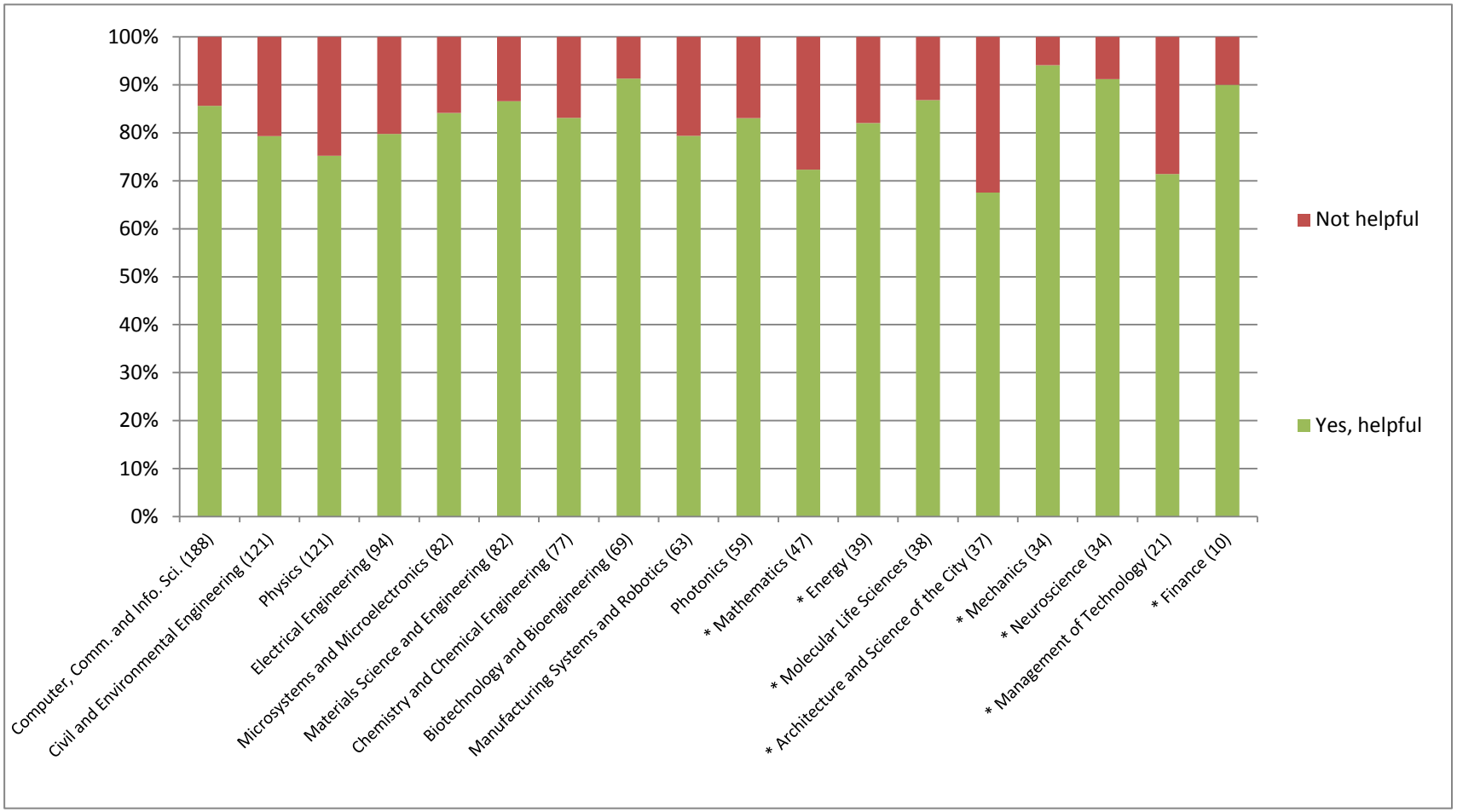
Note: Association is found to be statistically significant using chi-square ($p<0.001$). Only larger programmes are taken into account and “not at the moment” removed for purposes of calculating significance as it has comparatively few responses.

Chart AA: Did they participate in communication through hiring event, open day or interview before coming to EPFL, by doctoral programme



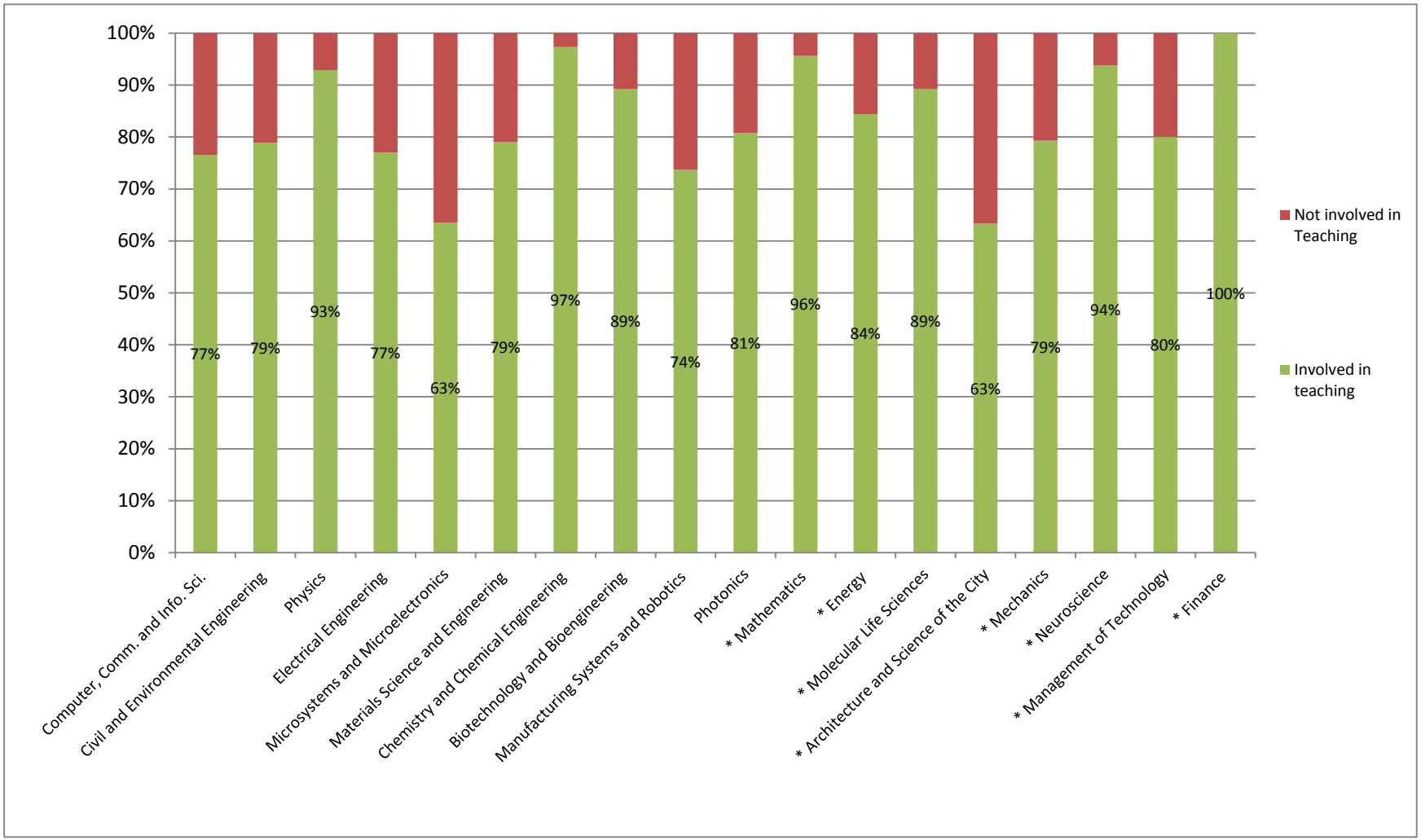
Note: Association is not found to be statistically significant. Only larger programmes are taken into account in calculating significance.

Chart AB: How helpful was the EPFL website with regard to information about doctoral studies here, by doctoral programme



Note: Association is not found to be statistically significant. Only larger programmes are taken into account in calculating significance.

Chart AC: Involvement in teaching for those who principally spend their time on the EPFL campus, by doctoral programme



Note: Total number of respondents is 1070.

Appendix II – Selection of qualitative responses on most positive and negative aspects of doing a PhD at EPFL

The survey contained two open questions at the end inviting respondents to identify the most positive and most negative aspects of doing a PhD at EPFL. 1,150 offered responses to as to the most positive aspects, while 1,120 offered responses as to the most negative aspects. Their responses were coded, analysed and presented in Chart 9.1 and 9.2. Here, a selection of their answers has been provided to give a sense of their "colour". The selection has been made with a view to highlighting something of the diversity of style and tone of response as well as with a view to providing some illustration of the categories presented in Charts 9.1 and 9.2. Both positive and negative aspects highlighted by the selected respondents are included (i.e., each row in the table represents one respondent). They have been edited slightly in order to maintain anonymity, and in order to make them easier to read, however the style and substance of each comment has not been changed.

What are the most positive aspects of doing a PhD at EPFL?	**What are the most negative aspects of doing a PhD at EPFL?**
Access to plenty of hardware resources	Overwhelming stress. Probably not specific to EPFL though.
Excellent people all around	People tend to confuse EPFL with specific labs. Too many students per professor.
Freedom Multicultural Peace Intellect	Stress Superficial Researchers, Papers and Presentations Guidance Loneliness
supervision, funds for equipment, computing resources, travels	Salary (paid 75% for 160% workload)
It's a dynamic institution with many possibilities and overall a great place to make a PhD	The administration is slow, non-efficient and is not doing a good job, the installations are old and outdated and there are not money to buy equipment and renovate the old, that mean that in long term the university will decay
Very good equipment of the research facilities Relevance of the research topics Quality of the professors Wide network of collaborations with important institutions from Switzerland and abroad	Large size of the structure and of the labs, which sometime make you feel unimportant The difficulty in finding an apartment in Lausanne, which makes the first few months quite stressing
The quality of research at EPFL is high	Finding my way around (administrative things, rules) on the EPFL internet site is difficult, especially because I am not located at EPFL
I learn a lot and meet with a lot of new people	It is stressful.
la qualité des équipements	le manque d'aide sur le projet
-Salaires -Réputations de l'EPFL -Qualité de vie en Suisse	Ne sais pas
LOADS OF FUN!!	Language barriers dry out the communications. If

Working with my professor is by far the best thing that has happened in my professional life.	not for my Russian-speaking friends, I'd certainly feel miserable.
EPFL is a very prosperous university that gives you many opportunities!	None so far
Well paid in the centre of Europe	French-speaking
- Quality of the academic chairs - Quality of life	- Workload due to teaching activities
Facilities and Salary	Many courses or some administrative parts are only in French!
EPFL is an international environment where multiple cultures coexist and respect each other. The research level is very high and the work conditions are quite good. Moreover, living in Switzerland is a nice experience, one of the best places to work and live in Europe.	Outside the campus students face occasionally discrimination (which gets far worse if someone does not speak French) but overall it is not bad. The positive aspects are far more important. (And of course finding a place to live is really difficult!)
Very good infrastructure Close by sports facilities + lake + alps	---
le cadre de vie, les conditions de travail, la recherche de pointe, etc..	Aucuns
The quality of research, the large number of courses and conferences and the salary.	The difficulties in finding an apartment.
Great location, lots of exchange with researchers from all over the world	Low salary relative to living in Switzerland, particularly compared to ETHZ
Unlimited access to labs offering various methods and techniques - so as to make my research more thorough, incredibly multicultural working environment, a very good salary.	A lot of pressure (but maybe it is my lab only?)
Working environment and the facilities that my lab is providing are excellent. Also I have a very good interaction within the lab. These are the keys elements to me. Apart from this, getting a decent salary is also very important as it makes you not to think about how to survive. As a foreigner, living in a city where I haven't faced any discrimination is as well significant.	Disconnection between the research groups that are working on highly related subjects.
Funding at EPFL is very good. The campus is homely and Lausanne is beautiful.	- Food in canteens is not very good; you should hire some Italian cook. - There is not enough space for cars in parking lots. - And, in my specific case, I'd like to have more access to different types of workshops to solve problems by myself. Security measures are too restricting, there should be possible to obtain certificates that allow PhD students to work autonomously without waiting for technical staff.
-Lausanne est une ville très agréable à vivre -Il y a heureusement encore beaucoup de personnes à l'EPFL qui ne pensent pas uniquement à leur propre carrière, mais qui ont	- L'école tient une position excessivement hypocrite vis-à-vis des doctorants. Elle ne soutient quasiment jamais les doctorants. Que ce soit dans les cas de « mobbing », les cas d'usurpation de travaux scientifiques, les cas

un désir de partager la connaissance. Cela permet d'évoluer dans un milieu motivant.	d'insultes graves, etc. Les professeurs ont toujours le dernier mot. - Les conditions de travail se dégradent (salaire, heures d'enseignement, rigidité des programmes) et rien n'est entrepris pour y remédier, si ce n'est quelques messages de propagande sur la valeur du diplôme final. - Finalement, même le questionnaire sur la vie doctorale est orienté... Plutôt que de proposer la réponse "J'ai eu des problèmes, mais rien de grave"
- Le salaire des doctorants - L'accès à de nombreux logiciels et sources bibliographiques - L'environnement agréable	- Le fait de devoir obligatoirement participer à une activité d'enseignement et privé en même temps que le doctorat - Le peu d'encadrement en raison du nombre de doctorants trop importants par rapport au nombre de chercheurs permanents - Peu de contact avec l'académique à l'étranger
I've enjoyed spending time with EPFL PhD students/ Prof., and the work was interesting.	I did not get the proper support in my first year of studies when things were very stressful. After the first year, I have changed my lab and things went well from there on. A mentor or some kind of available counselling would have helped.
To live in Switzerland	None
Une certaine liberté, des moyens conséquents (budget du laboratoire, tous les espaces de travail ont des fenêtres, etc.), une bonne reconnaissance internationale.	Pas d'avis
The secretaries do their job and the researchers are friendly and impassioned about their job.	EPFL spends millions on reputation and almost nothing for housing. The lodgement office does not help PhDs, it helps only the other students.
La qualité des infrastructures; La qualité du suivi doctoral par des professeurs renommés; La beauté du campus, la proximité du lac et la possibilité de participer aux sports universitaires.	Le coût de la vie dans la région lausannoise; La pénurie de logements à Lausanne.
EPFL has a very good reputation as a research institution, which may be useful for my future career. Moreover, I am lucky to work with great colleagues who give me a lot of support when there are problems. Apart from the difficulties to find apartments and the expensive rents, Lausanne is a great place to live and work at, and there is plenty of possibilities to go hiking, biking, skiing (...) in the area (if one finds time to do that and is not all consumed by work, as it is mostly the case for me).	Nothing specific. Sometimes I feel everything is quite anonymous and nobody really cares for individuals and their problems. You either make it, or you don't - who cares? If you don't help yourself in the first place, don't expect too much help from others. If you want help, fight for it, or fight without help. But I would not say this is specific to EPFL, this is a rather more general observation that also seems to be true for a lot of other people that I know and who are doing their PhDs at other research institutions, also in other countries.
The nice environment created by people	The first year of PhD feels like doing another year

(Professors, PhD students, admin. staff), the feeling you belong to a community which will help you out when there is a problem.	of Master's degree. The credits demanded are quite many and the time we have to spend for classes is significant, hence the time we can dedicate for research is less. Also the candidancy exam seems to me an unneeded imitation of the US PhD model.
Multidisciplinary research environment, nice living environment and good salary	Not enough labs related to our research interests and not enough good seminars
Perfect conditions for research.	Lausanne (small city, housing problem, negative aspects of Swiss mentality)
Now that I have spent some years here, all the illusions that I had have left, so the only positive point that I still can kindly give to you is the reputation. If I would want to be ironic, I would say that I can sometimes see the lake from my office window (that would double the number of positive aspects, which is a nice results, right?), as the second positive aspect.	Exploitation, poor management, poor scientific quality, no time for quality work, no time for personal life... Want more? The first person that suggests we are too much paid should shut their mouth and think twice, really…
Good research environments Excellent experts in the fields Peaceful city	Hard to find accommodation
Multicultural environment. Location. Decent salary.	Some professors may push their students too hard to keep the ranking of the doctoral program.
Salary; Switzerland as a country; Prestige of EPFL	Lifestyle in Switzerland; Too much extra-thesis involvement; Weather
A good ambiance, great infrastructure, high standards, automatic and positive recognition by academics from other universities.	Transportation can be troublesome, particularly for those who don't leave as near the M1, and the financing is a grey zone... Some PhDs work as assistants and must be active in their lab's activities; others receive the same salary as assistants without any further engagements. Many have a 50% contract only... some need to look around for scholarships, or risk their time in the hopes of receiving the support of SNF...
Reputation and generous funds available for research	Too few social events and great workload combined with a salary which is much lower than the one available in industry
1. Reputation of EPFL - high quality studies - visibility abroad 2. A high standard of living due to the salary level. If not for the money I would not consider Switzerland at all (too expensive) 3. International environment 4. Switzerland is expensive, but it IS a beautiful country :-) There's a lot to see during the weekends!	1. Initial months are a nightmare. It is next to impossible to find accommodation in less than a month and most students keep looking even after a couple of months. In my case I was staying for 4 and half months in a hostel. 2. Learning the French language, although a useful and great skill, will take some significant time from the doctoral studies, at least in the first two years.
The fact of knowing people from all around the world.	The EPFL, as a federal (governmental) institution, has become a tool of productivity and competitiveness for the Swiss industry and government in detriment of the research skills of

	the PhD students, instead of promoting a space of research where the collaboration and the knowledge are promoted.
Freedom to do research: not so many teaching obligations, a good salary, opportunities to travel to conferences. Opportunities to do internships with industry and at other universities. Lausanne is nice: just about right in size, enough activities, lake.	There are not that many. I would recommend EPFL to people that want to do a PhD. If people don't speak French and are not that into learning it (or just don't find for learning it), social life can sometimes be a bit difficult. But that might be their (mine too) problem. If people don't like to move from one country to another (to avoid all the paperwork that needs to be done all over again), would like to pursue an academic career and are not Swiss they might be better off in US.
I'm part of a competent research group. The work environment is excellent. Resources and budget for experiments are available. My lab has good contacts with enterprises and other institutions.	I've nothing negative to say about EPFL.

Appendix III – The survey

DOCTORAT II Questionnaire

SECTION 1 : Choosing EPFL

1#	**What were your two main reasons for choosing to do your doctoral studies at EPFL instead of elsewhere?**	Choose maximum 2 □ Because I was already at EPFL □ Because EPFL has a good reputation □ Because the lab I joined or its professor(s) has a good reputation □ Because of a specific EPFL doctoral program □ Because EPFL offered me a grant □ Because my lab offered me a position □ Because EPFL doctoral studies are in English □ Because of the attractive salary at EPFL □ Because Lausanne is in a French-speaking area □ Because I had family or friends in the area □ Because I like Switzerland □ Other (please specify)
2#	**What other universities did you apply to?**	□ I didn't apply elsewhere □ *[menu déroulant IS-A]*
3,4,5#	**Was your application accepted?**	University 1 □ I applied but was not accepted □ I was accepted but chose EPFL University 2 □ I applied but was not accepted □ I was accepted but chose EPFL University 3

		□ I applied but was not accepted □ I was accepted but chose EPFL
	How helpful was the EPFL website with regard to information about doctoral studies here?	
6#	I could access relevant information on the website.	□ Yes, in general □ No, not really
7	*[Si « no »] [plusieurs choix possibles]* Why not ?	□ The right information wasn't there □ I couldn't navigate the site
8	**Before you started at EPFL did you participate in:**	□ A hiring day, open day or similar group event? □ A one-on-one interview with your future advisor? □ An interview via skype, phone or similar? □ Other (please specify) □ None of the above
9	*[Si réponse positive à Q8.]* **Was this interaction helpful for you in making your decision to choose EPFL?**	□ Yes □ No □ No opinion

SECTION 2: Your start at EPFL			
	How were your first days at EPFL?		
10*	The welcome I received from the lab I joined was:	□ Excellent □ Quite Good □ Rather Poor □ Poor □ Not applicable	
11*	The welcome I received from the doctoral program was:	□ Excellent □ Quite Good □ Rather Poor □ Poor □ Not applicable	
12	I attended a Welcome Day / Welcome Week:	□ Yes □ No	
13	[Si "yes" Q12]		
	The Welcome Day event was helpful:	□ To obtain information □ To get to know others	
	[deux choix possibles]		
	During the enrolment process, did you encounter difficulties with:		
14	The application and admission process managed by EPFL	□ Yes □ No	
	[Si "yes" Q13]	Please specify	
15#	[Filtre : CH non-resident, filtre non-EU (plus RO, BG)]	□ Yes □ No □ Not applicable	
	The visa application process managed by the Swiss Embassy		
	[Si "yes"]	Please specify	
16	The work permit process managed by the Swiss authorities	□ Yes □ No □ Not applicable	
	[Si "yes"]	Please specify	
17	Other issues related to starting your PhD at EPFL	□ Yes □ No	
	[Si "yes"]	Please specify	

SECTION 3: Your research and teaching activities		
18#	Where do you spend most of your time doing your PhD?	□ On the EPFL campus □ In a company or research institute (please specify) □ Elsewhere [specify]
19*	[If company, research institute or other] How do you experience this situation of not being on campus (contact with supervisor, with other students, taking courses, additional training, etc.)?	
	Please rate the quality of the following:	
20	The administrative support you receive in your studies and research.	□ Excellent □ Quite Good □ Rather Poor □ Poor Comments
21	The availability of general administrative information on the EPFL website.	□ Excellent □ Quite Good □ Rather Poor □ Poor Comments
22	[si langue correspondence = en] The ease with which you can speak with administrative staff in English	□ Excellent □ Quite Good □ Rather Poor □ Poor Comments
	Please rate the frequency of scientific guidance you receive from:	
23#	Your thesis director [Si réponse] Please specify how often (on average) you meet with this person	□ Too little □ Just right □ Too often □ Not applicable □ At least once a week □ At least once every two weeks □ At least once a month □ Less than once a month □ Never

24	Your thesis co-director	□ Too little □ Just right □ Too often □ Not applicable
	[Si réponse] Please specify how often (on average) you meet with this person	□ At least once a week □ At least once every two weeks □ At least once a month □ Less than once a month □ Never
25#	Other staff members in your lab	□ Too little □ Just right □ Too often □ Not applicable
	[Si réponse] Please specify how often (on average) you meet with this person	□ At least once a week □ At least once every two weeks □ At least once a month □ Less than once a month □ Never
26#	Other(s)	Please specify who:
	[Si réponse] Please specify how often (on average) you meet with this person	□ Too little □ Just right □ Too often □ Not applicable □ At least once a week □ At least once every two weeks □ At least once a month □ Less than once a month □ Never
	Please rate the usefulness of the scientific guidance you receive from:	
27	Your thesis director	□ Very useful □ Useful □ Not useful □ Not applicable
28	Your thesis co-director	□ Very useful □ Useful □ Not useful □ Not applicable
29	Other staff members in your lab	□ Very useful □ Useful □ Not useful □ Not applicable
30	Other(s)	Please specify who: □ Very useful □ Useful □ Not useful □ Not applicable
	How often does the teaching activity you are engaged in include:	* □ I am not involved in teaching activities. Si coché, sauter à 40
31	Course preparation, administration tasks, evaluation (moodle, exams, photocopies, etc.)	□ Often □ Occasionally □ Rarely □ Never
32	Semester or Master projects (individual supervision)	□ Often □ Occasionally □ Rarely □ Never
33	Course exercises and teaching lab courses (« travaux pratiques »)	□ Often □ Occasionally □ Rarely □ Never
34	Teaching courses (occasionally replacing the professor, teaching as a « chargé de cours »)	□ Often □ Occasionally □ Rarely □ Never
35*	How do you consider your teaching experience?	□ A positive and useful experience □ A pleasant but unfruitful break in my week □ An unpleasant waste of time

		□ Other [Please specify]
36	Do you feel well prepared for your participation in EPFL's teaching activities?	□ Yes □ No
37*	[Si "no" Q36] Why not?	□ I have little experience in the contents of the course(s) I am involved in □ I need more advice on pedagogical aspects □ I have language problems □ Other [please specify]
38*	During an average working week in the last semester, what was the distribution of your working hours?	[Echelle %, total = 100%] % doctoral research (including hardware setup, data analysis, reading/writing papers, attending conferences, etc.) % my own training (participation in doctoral courses and related homework, other coursework) % teaching activities (teaching exercises or lab sessions, correcting exams, supervising students' semester or diploma projects, etc.) % other research activities (related to the lab but not directly to my PhD) % other (service duties for my lab)
	To what extent do you agree with the following statements:	
39	"There's a real spirit of listening and dialogue between me and my thesis director."	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree
40	"Overall I am satisfied with the conditions under which I am conducting my thesis research."	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree
41	"I receive clear and complete information from Human Resources with regard to my employment conditions."	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree

SECTION 4: Doctoral courses		
	Please rate your opinion of your doctoral program as a scientific community in terms of:	
42	Access to external seminars, workshops and summer schools	□ Excellent □ Quite Good □ Rather Poor □ Poor
43	Internal research events (poster sessions, conferences, workshops)	□ Excellent □ Quite Good □ Rather Poor □ Poor
	Please rate the quality and range of doctoral level scientific courses as follows:	
44	I can find enough courses relevant to my research interests.	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree
45	I can be sure I will be able to take the courses I plan to take (they are not cancelled or postponed).	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree
46#	In general, the courses I take are of good quality (teaching, content).	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree
47#	There is a good choice of courses organized outside EPFL (including where the host institution partners with EPFL).	□ Strongly agree □ Mainly agree □ Mainly disagree □ Strongly disagree □ Don't know
48#	What are the main reason(s) you take the courses you choose:	Choose maximum 2 □ They will be useful for my thesis work. □ They will broaden my methodological expertise. □ They will broaden my expertise on topics related to my thesis. □ They look interesting to me. □ They will be useful for my career development. □ They have an interesting "credits/workload" ratio. □ My advisor tells me to take them, or my program requires it.
	Please indicate whether you would be interested in the following training:	
49	Research and professional ethics	□ Very interested □ Interested □ Not interested □ Not applicable

50	Research methodology	□ Very interested □ Interested □ Not interested □ Not applicable
51	The nature and scope of knowledge (epistemology) and the history of science	□ Very interested □ Interested □ Not interested □ Not applicable
52	What is your opinion of management or professional skills courses (scientific communication skills, presentation skills, team leadership training, language courses, etc.)?	(multiple answers possible) □ They are useful in my current situation. □ They will be useful in my future roles. □ I'm interested and want to sign up but don't get a place or the course/s is/are cancelled. □ I'm interested but my teaching/lab/research duties take priority and I've had to cut time (or even withdraw) from the course. □ I'd like to take the course but my thesis director won't approve my request. □ Other [specify]
53	Do you have the opportunity for international collaboration and outreach during your PhD?	(multiple answers possible) □ I can take the opportunity to go to an international conference at least once a year. □ I have contact with invited professors and academic guests. □ I have the opportunity to visit external institutions to develop my research. □ I am encouraged to submit articles for publication.
54 (a)	[admission definitive = non] How do you perceive the candidacy exam?	[multiple answers possible] □ It's just a pass/fail hurdle I have to get through. □ It will be useful to help me understand the various steps involved in my research. □ It will help me practice communicating my ideas (oral presentations, written proposals) □ It will be helpful as a validation of my theoretical approach.

□ It will push me to advance in my doctoral project.
□ Other [specify]

54 (b) [admission definitive = oui] [filtre : date immat > 09.2008]
How did you experience the candidacy exam?

(multiple answers possible)
□ It was nothing but a pass/fail hurdle to get through.
□ It helped me understand the various steps involved in my research.
□ It was a useful as a practice for communicating my ideas (oral presentations, written proposals)
□ It was helpful as a validation of my theoretical approach.
□ It pushed me to advance in my doctoral project.
□ Other [specify]

SECTION 5: Doctoral Life		
55	Please evaluate the quality of your social life during your doctorate	□ I am satisfied with the social life in my research group □ I am satisfied with the social life in my doctoral program □ I am satisfied with the offer of cultural and social activities at EPFL (associations, events, etc.) □ I am satisfied with my social life outside of my research environment Any comments?
56	Do you feel there is adequate protection on campus to ensure your personal safety against aggressive or violent situations?	□ Yes, very much □ Yes, it's fine □ No, it's poor □ No, it's very poor
	Do you feel adequately represented as a doctoral candidate at the following forums:	
57	Your doctoral program's committee	□ Yes □ No □ Don't know
58	The Doctoral School's Commission (the meeting of all the program directors and the dean)	□ Yes □ No □ Don't know
59	Your research group's faculty	□ Yes □ No □ Don't know
60	EPFL as a whole	□ Yes □ No □ Don't know
61	How would you consider your current well-being?	[une seule réponse] □ I'm coping well and don't feel stressed at all □ I feel stressed but I'm handling it □ I'm beginning to feel overwhelmed □ I'm overwhelmed
62	[Si réponse à Q61 b à d] What do you think causes the most stress in your life right now?	[une seule réponse] □ Workload

		□ My supervision □ Other members of my work group □ Research challenges □ Managing my doctorate with my life □ Life outside research □ Other
63	Have you ever experienced difficulties in your working relationships with particular personnel (teaching, administrative, technical, security staff, etc.)?	[une seule réponse] □ No - everything has been fine. □ Not really - I've had some problems but they were minor. □ Yes, I've had some serious difficulties.
64	[Si "yes" Q63, b ou c] With whom (mainly) did you have these difficulties? Note : all answers to this questionnaire will remain confidential	□ My thesis director □ My thesis co-director □ A course instructor □ Another researcher in my lab □ Another doctoral candidate □ A technician staff member □ An administrative staff member □ Other/comments
65 [65a]	[Question dépendant de la réponse à Q.63] When you had a serious relational problem, who was the first person you turned to for help?	[une seule réponse] □ My thesis director

[65b]	When you had such a problem, who was the first person you turned to for help?	□ My thesis co-director
[65c]	If you had a relational problem, who would be the first person you turn to for help?	□ My mentor from my doctoral program □ My doctoral program director □ My doctoral program's administrative assistant □ My research group's secretary □ Student Social Affairs (SAE) □ The helpme.epfl network (mediator, psychological support, aumonerie…) □ ACIDE □ Other /comments
66	Do you feel you've ever had problems during your doctoral studies through discrimination against your ethnicity, religion, origin, gender or sexual orientation?	[une seule réponse] □ No – it's never been an issue. □ I've had some minor problems, but nothing serious. □ Yes, I've had some serious problems. Comments
67	Do you have a designated mentor as part of your doctoral program?	[une seule réponse] □ Yes □ No □ Not right now (a system is in place) □ I don't know Comments

68	How would you like to see the final exam and defense process to obtain your degree?	[une seule réponse] □ Keep the oral exam and public defense organized as they are. □ Make the public defense more formal, but keep it as an individual event after the oral exam. □ Combine the oral thesis exam and public defense, with a restricted audience. □ Keep the oral exam private, and have a common “defense” event organized by the doctoral program for all its new graduates. □ Keep the oral exam private, and have a formal EPFL graduation ceremony once per year for all new doctoral graduates. □ Other

SECTION 6 : After your PhD		
69#	Would you like to stay in Switzerland after your PhD?	□ Yes □ No □ Don't know
70#	Where do you see yourself in the first few years after your PhD?	(multiple answers possible) □ Pursuing an academic career (post-doc followed by professorship) □ Moving between academia and industry, public and private. □ Working in a for-profit company. □ Building my own business. □ Working in a non-profit organization (public research, government, humanitarian, etc.) □ Taking some time off. □ I don't have any plans yet. □ Other [specify]
71	Who would you go to for help in planning your career?	(multiple answers possible) □ My thesis director □ Someone else in my research group □ The Career Center □ Online advice □ My network of contacts □ Other [specify] □ I don't know
72	When did you (or when do you plan to) start planning for your career after your PhD?	[une seule réponse] □ Before I applied for admission to doctoral studies at EPFL. □ After admission and before the end of my first year at EPFL. □ After my first year but before my oral exam. □ Between my oral exam and the public defense.

□ After my public defense.

SECTION 7: Summary		
73	What are the most positive aspects of doing a PhD at EPFL?	
74	What are the most negative aspects of doing a PhD at EPFL?	