GEDII GENDER DIVERSITY IMPACT – Improving research and innovation through gender diversity

WWW.GEDII.EU

Project Deliverable

D4.3 Survey Analysis and Performance Indicator Research Report

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15th January 2019 – **version 2.0 FINAL**

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 665851.

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Acknowledgements

The results of this report would have been impossible without the collaboration of R&D teams across Europe that were willing to participate in our survey. We are very thankful to all team leaders as well as team members for their trust, time and support of this project.

In this report, a large part of the results of the GEDII project are combined. As such it is the outcome of a collective, prolonged effort that merges diverse scientific expertise and skills. The questionnaires were designed collaboratively by Ulrike Busolt, Sandra Klatt, Wiebke Kronsbein (HFU), Anne Laure Humbert, Elisabeth Guenther (Brooks/CRA), Ulf Sandström, Anne-Charlott Callerstig (ORU) and Julio Meneses, Milagros Sáinz, and Jörg Müller (UOC). An advanced draft received valuable comments from the members of the Advisory Board. Web of Science data mining of bibliometric data was carried out by Ulf Sandström. PATSTAT data mining of inventors and patents was organized and supervised by Sandra Klatt, Wiebke Kronsbein and Ulrike Busolt. The online version of the questionnaire was implemented by Wiebke Kronsbein and Jörg Müller. Address verification and team recruitment was carried out by each partner in their respective countries with VDE supporting German recruitment while CRA covered the UK and Lithuania. UOC carried out 2nd wave recruitment across 11 additional countries. Regarding the analysis: Ulf Sandström retrieved and generated bibliometric performance indicators for each research group; Sandra Klatt and Wiebke Kronsbein provided patent based performance indicators as well as the descriptive statistics part of the present report. Anne Laure Humbert and Elisabeth Guenther carried out the statistical modelling between team variables and performance data. The overall coordination of WP4 was carried out by Jörg Müller.

Executive Summary

- The present deliverable reports the findings of the cross-country survey regarding gender diversity in R&D teams across Europe and its link to performance indicators carried as part of Work Package 4 of the GEDII project. The empirical evidence is based upon 1,357 complete questionnaire submissions across 159 teams in the following 17 countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and the UK.

- The original recruitment of R&D teams targeted the transport and biomedical engineering sectors in public and private organizations. However, responding teams cover a variety of disciplinary backgrounds, including the social sciences and economics. Most teams were recruited from Spain (approximately 500 individual responses) and Sweden (approximately 300 responses) followed by Germany, the UK, the Netherlands approximating about 100 individual responses each. The fieldwork was conducted between March 2017 and January 2018. Despite concerted efforts, response from the private sector was negligible. The vast majority of R&D teams participating in this survey therefore belong to public Research Performing Organizations.

- R&D teams reaching a sufficiently high response rate threshold were included in the analysis of the diversity-performance link. First bibliometric and patent performance indicators were compiled. A team was understood as a group of people working together and bound by the same organizational context (e.g. through formal labor contract or being a doctoral student). Web of Science publications as well as patents were collected for the groups participating. Bibliometric indicators such as the Field Adjusted Performance (FAP) and Percentile Model (PM) were calculated in order to compare performance of research groups across scientific fields. Patent indicators counted the number of patents per team.

- Gendered processes within teams were captured through the Gender Diversity Index (GDI), a composite indicator developed in Work Package 3 of this project (see Humbert & Guenther 2018). The GDI measures the representation and attrition of women and men within teams along seven dimensions of diversity, such as education, age, marital status, care responsibilities, team tenure, seniority and contract type. The GDI provides a score bound between 0 and 1, where 1 signals a more inclusive team.

Key Results

- Our preliminary analysis shows that inclusive teams as defined by the Gender Diversity Index do not affect research performance. Regarding gender differences, the models also indicate that there are not statistically significant effect of the share of women on performance – defined as both productivity and impact.

- There is no statistically significant effect on the quality rank of the published research (Percentile Model). Initial modelling also does not indicate a significant mediation effect of team processes such as team climate, power disparity, perception of leadership style or diversity climate.
- Considering the bibliometric profiles across R&D teams we observe a certain variety of above and below average performing groups. The same holds true regarding the Gender Diversity Index where we observe teams spanning the entire range of GDI scores from 0 to 1.

Limitations

- The survey did not target a representative sample of European R&D groups. Field access was organized through Web of Science and PATSTAT address retrieval, i.e. it reached primarily those groups that have an active track record of publications in the respective transport and biomedical engineering fields.
- Second, the survey targeted active team members pertaining to the group at the time of the survey; it thus provides a snapshot of the team at a specific moment in time. However, performance data measures scientific output with a certain delay as publishing results takes time. A better fit between the team survey and the scientific output of the team that answered to the survey will become available over the next two to three years.
- Third, generating a bibliometric performance profile for individual R&D groups is a complex process. Performance profiles have been validated with team leaders but feedback still needs to be incorporated into the bibliometric data. However, given the received feedback from teams so far, we expect little changes to the overall results.

Introduction

Among the core objectives of the GEDII project, and in particular WP4, is the attempt to examine the relationship between gender diversity and research performance. Towards this goal, we designed and implemented a survey across 16 countries in Europe, generating first-hand evidence on a large, cross-European scale. The survey was complemented by a qualitative case study approach developed during WP2, which concentrated on the development of new methods and tools using 'sociometric badges' (see Deliverable 2.4, Müller 2018) for studying gendered team interaction.

The following report provides a comprehensive summary of the development of the questionnaire, field access and data collection procedure as well as the first results of our analysis. Although the survey targeted largely research and development (R&D) teams in the public *and* private sector, the response rate from the private sector teams was extremely poor. Overall, a total of 159 teams participated: 86 teams reached a within-team response rate of 70% or more; 121 teams were at or above a 50% response rate. Across all teams, 1,357 individuals completed questionnaires.

The overall design of WP4 is unique in that it combines responses from a questionnaire distributed among team members with performance measures derived from bibliometric analysis. Contrary to many existing studies, the research performance of each team was captured by retrieving their corresponding publications from the Web of Science. Using bibliometric methods, standardized performance indicators were thus generated that allowed to compare groups across different scientific fields. Although there are several important limitations to this approach, some of which related to the time-lag with which publications of the current group become available, we believe that it provides an insightful approach in that it combines information only available through a team-survey with a detailed bibliometric profile.

WP4 and its results are closely related to WP3 in which the Gender Diversity Index was developed (see Humbert & Guenther 2018). The Gender Diversity Index (GDI) is a composite indicator that provides a summary measure of gendered processes at the team level (representation and attrition). The Index relies on indicators of demographic diversity that encompass age, marital status, care responsibilities and education. It furthermore incorporates functional diversity such as team tenure, seniority and contract-type. For example, the GDI assesses women's and men's participation in senior positions as well as attrition rates from junior to senior positions within the team. It provides an instrument to assess the influence of gender on research performance in a more sophisticated way than simply 'counting heads', i.e. linking performance with the proportion of women and men on the team. As described in detail in Deliverable 3.2, the construction of the GDI, specifically the weighting of its individual components, draws on the data collected through the survey.

Overview of the report

The remainder of this report is structured as follows: Chapter one describes the methods for designing the questionnaire, gaining field access and compilation of the bibliometric and patent performance data.

Chapter two then presents in more detail the methods used for generating bibliometric as well as patent based performance indicators. It focuses especially on the construction of performance indicators that can be used across scientific fields, for which detailed explanations are required.

Chapter three presents the statistical modelling between gender diversity within teams and the performance data. It also examines contextual data such as team climate, leadership or communication patterns within the team.

Several Annexes are provided that contain the questionnaires used, a detailed overview of the recruitment efforts and results, an example bibliometric performance profile as well as an overview of the descriptive statistics for each variable in the questionnaire.

Chapter 1 - Methodology

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The following section describes the methodology followed for the design of the questionnaire as well as for gaining access to the field and recruiting of teams. As will become clear, the need to reach a sufficiently high response rate from research teams required a quite elaborated recruitment strategy and flexibility to adapt field access procedure as well as the overall duration of the field phase. Overall, the methodology mirrors the challenges faced by the GEDII Consortium in compiling an innovative dataset that combines detailed team variables with solid bibliometric performance data.

Design of the Questionnaire(s)

The questionnaire design was informed by the Conceptual Framework (D1.1, see Müller et al. 2016) as well as the requirements of the Gender Diversity Index (D3.2, see Humbert & Guenther 2017). The first versions of the questionnaire were developed among the members of the Consortium; an advanced draft was presented to the Advisory Board of the project; the resulting feedback was incorporated into subsequent versions.

The survey integrates two questionnaires: a team member and a team contact questionnaire. The *team member questionnaire* was filled out by each member of the group individually and covers issues such as socio-demographic variables, current role and tenure in the team, professional situation and career, or care responsibilities among other items.[1] The team member questionnaire combines these more standard socio-demographic variables with established and validated measurement scales that have been widely used in the team science literature (see next section). However, information about the team itself was covered by a second questionnaire, the so-called *team contact questionnaire*.[2] It was filled out by one person per team – ideally, but not necessarily, the team leader – since it focused on issues that concern the research group as a whole, and whose details might not be known to all members. Items include, for example, the founding year of the team, the type of organization, number of employees, shared office/lab space, the existence of a gender equality plan or the working methodologies used by the group. The team-level information as well as all responses from the team members were then combined into a single dataset.[3]

1 The contact questionnaire is available in Annex I – Team Contact Questionnaire on page 59.

2 The member questionnaire is available in Annex II – Team Member Questionnaire on page 62.

3 Responses were combined by using a unique team code that allows to assign individual responses as well as answer to the team contact to one and the same group

Measures

Gender Stereotypes (Q29) – Gender stereotypes are part of 'doing' gender (Martin, 2003) within teams and therefore co-produce gendered processes as well as team processes. The analysis relies on a scale developed by Kearney, Razinskas, Weiss and Hoegl (Kearney, Razinskas, Weiss, & Hoegl, n.d.). This scale asks participants to state whether they disagree or agree with the following four items: "Women and men have their respective strengths in different areas", "Women and men generally have different ways of contributing to a team task", "Women and men generally have different communication styles" and "Many of the widespread ideas about how women and men differ are accurate". These items show reliability and internal consistency (Cronbach's Alpha = 0.79).

Diversity Climate (Q13) – Diversity climate is captured through the sexist climate scale devised by Settles et al. (2006). This scale is introduced with the question "How would you characterise the working climate at your wider working environment?" and consists of the following four items: "Senior employees respect junior male and female employees equally", "In meetings, people pay just as much attention when women speak as when men speak", "Allegations of gender based and sexual harassment are taken seriously by management" and "In this organisation, I would feel comfortable to raise issues about the treatment of women or men". Respondents can rate each item on a scale from 1 (strongly disagree) to 5 (strongly agree). The four items show internal consistency (Cronbach's Alpha = 0.79).

Team Influence (power disparity) (Q10) – Power disparity is measured through a short scale, first used by Curşeu and Sari (2015). The scale consists of four items (Cronbach's alpha = 0.85): "To which extent do you think that you can influence your team members?"; "I have preferential position in my team and I can easily influence the other team members"; "I have the resources and power to influence the actions of the other team members"; and "I have more power within my team compared to the other team members".

Team Climate (Q11) – A short version of the team climate inventory with 14 items (Boada-Grau, de Diego-Vallejo, de Llanos-Serra, & Vigil-Colet, 2011; Kivimaki & Elovainio, 1999; Strating & Nieboer, 2009) was used. The original (large) scale was developed by Anderson & West (1998). The inventory includes items such as "I am clear about what my team's objectives are", "We have a 'we are in it together' attitude", "There are real attempts to share information throughout the team", "We are prepared to question the basis of what the team is doing" or "We are always searching for fresh, new ways of looking at problems". The team climate scale comprises four factors: "Vision", "Participation Safety", "Task Orientation", and "Support for Innovation". One of the item measuring 'Participative Safety' ("People feel understood and accepted by each other") was not included, instead one additional item for 'vision' was added ("I'm clear about what my team's objectives are"). The 14 items show high internal consistency with Cronbach's alpha at 0.92.

Leadership Style (Q12) – The perception of team leadership is assessed using the scale developed by Berger et al. (2012). The eight items capture the members' perception of their team leader. This scale was introduced with the prompt "Please assess your team leaders' leadership style" and includes items such as "She/he develops ways of motivating us", "She/

he promotes the use of intelligence to overcome obstacles" or "She/he actively fosters trust, involvement and cooperation among team members". The scale shows high internal consistency with a Cronbach's alpha of 0.93. The original leadership scale was complemented by three additional items: "She/he has realistic expectations on the outcome of my work", "She/he has realistic expectations on the time schedule I need for my work", "She/he actively fosters trust, involvement and cooperation among team members".

Team Communication (Q9) – The formal and informal communication and frequency of communication among team members was measured using an adapted scale from Pinto & Pinto (Pinto & Pinto, 1990) The scales measures frequency as "Never", "Once per month or less", "Once per week or less", "A few times per week", "Once per day or more" regarding formal meetings, formal memos, appointments, telephone/skype calls or informal discussions.

Gaining Access to the Field

Field access has been based upon data mining the Web of Science database (authors of publications) on the one hand, and the PATSTAT database (inventors) on the other. Important selection criteria guided and limited the data mining exercise from the outset in terms of subject areas as well as country choice[4].

Strategic Subject- and Country Choices

Subject areas. The initial proposal included two thematic areas – Biomedical Engineering and Transport research – as the target of the survey. Biomedical engineering is of high societal relevance since new medical applications, better diagnostics and more effective treatment applications hugely impact people's lives. Better performing teams would not only make a real difference for many citizens, but also contribute to increase European competitiveness. Second, biomedical engineering is result-oriented and is a field where traditional performance indicators, such as publications and patents, are well established. Furthermore, since it combines research with final product application, we can observe 'performance' along the pipeline from basic research up to product deployment. Third, biomedical engineering combines classical medical research with engineering applications; interdisciplinary teams are common and combine very divergent subject areas ranging from medicine, biology, engineering, optics, electronics and others. The fact that teams have to draw upon very diverse subject areas eases the observation of factors that facilitate knowledge integration. In other words, tasks are sufficiently complex as to be able to observe the benefits of diversity. The disciplinary mix also eases finding sufficiently gender diverse teams. Fourth, whereas medicine is relatively gender balanced, engineering is usually dominated by men. This provides us with a rich context of changing gender role expectations

4 However, the selection criteria in terms of country choices were expanded during the field phase in order to include more countries, hence access more teams and increase the overall response rate to our survey.

and responsibilities and gender diverse teams.

Transport research has been selected as a second field because it tackles issues of strategic importance for society such as environmental friendly and resource efficient mobility. It pertains to Horizon 2020's Societal Challenges; better research decisions and outcomes are vital for Europe's internal market and citizen's quality of life. The transport sector includes air, rail, road, urban and water transport. Whereas a large part of employment in this sector is concerned with the management of infrastructures and vehicles, important research questions concern intelligent transport systems, innovative vehicle technologies and transport management. Hence, in contrast to medical engineering, transport research is often very process oriented: examples include intelligent transport systems, or improving safety and efficiency of infrastructures and vehicles. Given its closeness to the everyday realities of citizens, transport research can be quite amenable to social innovations. This will allow us to extend the traditional performance indicators of medical engineering with 'alternative' and emerging ones. Third, transport research draws upon different subject areas such as mechanics, electronics, computer science (routing problems), and engineering. Women are under-represented in the transport labour force as it is another highly men-oriented field. However, recent societal needs regarding efficient energy use, sustainability and ecological transport have made it more attractive to women. This mix of gendered professional fields provides a rich context for exploring the benefits of gender diversity in teams.

Country choices. An initial set of five countries was selected to implement the GEDII survey in, which consisted of Sweden, the UK, Germany, Spain and Lithuania. This initial set of countries was expanded during a second wave of survey roll-out to increase the number of responding R&D teams. The additional selected countries included: Norway, Finland, Belgium, Denmark, Netherlands, Poland, Czech Republic, Portugal, Austria, Switzerland and Italy.

Both the initial and expanded selection of countries enables to contrast high and moderate innovation countries with different welfare and gender regimes. In relation to gender, both science and policy contexts differ within European Member States in terms of (1) research agendas, (2) infrastructures, instruments and methods of implementing gender equality policies, (3) the extent to which the issue has been integrated into policy discussions and policy-making, (4) the level of coordination by different institutions, and (5) the overall emphasis and attention given to gender in science. Our choice of countries is representative of five different *welfare regimes* of the EU Member States as Table 1 demonstrates (Esping-Andersen, 1990; Ferrera, 1996; Korpi, 2000). Welfare regimes capture common trends in the division of work between women and men and how they may be counter-balanced or enhanced by broader structural, political and ideological country-specific factors. The employment structure and its gender-specific occupational patterns shape opportunities and constraints in the labour market. There are considerable national differences in the extent of women's employment attachment over the life course, full-time and part-time work, gender occupational segregation and gender pay gap, at least partially related to welfare regimes (Blossfeld, 2001; Esping-Andersen, 1999, 2002; European Commission, 2008).

At the same time, welfare regimes interface with different country clusters regarding their innovation capacity (European Commission, 2017). This is important for establishing comparisons of gender equality policies in relation to the innovation capacity across the EU member states. There are four clusters of countries: innovation leaders, strong innovators, moderate innovators, and modest innovators. Our choice of countries has representatives from the first three clusters, with a certain bias towards innovation leaders and strong innovators, as we expect to recruit more teams in countries that have a strong R&D sector.

Welfare regime country cluster	Survey Countries	EU Innovation Scoreboard Cluster	Survey Wave
Nordic	Sweden	Innovation Leader	1st
Anglo-Saxon	UK	Innovation Leader	1st
Continental	Germany	Innovation Leader	1st
Southern	Spain	Moderate Innovators	1st
Eastern	Lithuania	Moderate Innovators	1st
Nordic	Norway	Strong Innovator	2nd
Nordic	Finland	Innovation Leader	2nd
Continental	Belgium	Strong Innovator	2nd
Nordic	Denmark	Innovation Leader	2nd
Continental	Netherlands	Innovation Leader	2nd
Eastern	Poland	Moderate Innovator	2nd
Eastern	Czech Republic	Moderate Innovator	2nd
Southern	Portugal	Moderate Innovator	2nd
Continental	Austria	Strong Innovator	2nd
Continental	Switzerland	Innovation Leader	2nd
Southern	Italy	Moderate Innovator	2nd

Table 1: Survey country choice by welfare regime and innovation capacity 2

Data Mining Procedures - Web of Science Authors

Author names and email addresses were downloaded from the Web of Science (WoS) database, carrying out the following steps:

1. All publications (articles only) following the criteria listed below were downloaded from WoS:
    a) Country matches for Lithuania, UK, Spain, Germany and Sweden (second wave countries: Netherlands, Belgium, Poland, Czech Republic, Austria, Switzerland, Denmark, Norway, Finland, Portugal, Italy).
    b) Subject Field contains “Transport” or “Transportation Science & Technology” or

"Engineering Biomedical"

c) Years: 2011 - 2016

2. The authors of this initial list of publications needed disambiguation, based on author last name and first initial (see Sandström & Sandström 2009). This is necessary in order to determine the number of publications for each author. Only authors that have a minimum of three publications over the given time period are retained; this identifies established authors within our area of interest vs. occasional authors.
3. Expansion of search to all publications for authors and co-authors. Filtering for relevant subject fields: Excluding "High Energy Physics", "Astronomy", as these tend to be fields with many authors per paper.
4. Disambiguation of authors of resulting file in order to assign unique author ID for each author.
5. In a further step, an author-to-email matching is performed. Where emails in the WoS files are available, each author id/name is associated with their corresponding email.

This initial data mining exercise produced an Excel file containing a list of authors with their corresponding emails and institutional affiliations for each of the chosen countries. The initial selection was limited in terms of including only groups that have publications that are listed in the Web of Science database.

Data Mining Procedures II – PATSTAT Inventors

For patents, the PATSTAT database (EPO PATSTAT data base Spring Edition 2016) was analysed with regard to patent applications in the technology fields of "Medical Technology" and "Transport".

The data for the time frame from 2009-2012 was used to begin with. The available database PATSTAT Spring edition 2016 contains complete patent data only up to the year 2012. To find prospective teams and companies respectively in the data base, a patent (with two or more inventors) of a specific country (e.g. Spain) and technology field (e.g. Medical Technology) was used as a starting point. The inventors (A, B, …) of this patent were identified. Then, all patents of inventor A, B, ... were searched for and again their co-inventors. This loop was repeated for all newfound patents and co-inventors, until no new data (patents, inventors) could be mined. The patent search was conducted in the whole database, not limited to the same applicant – company/university - or technology field). Out of this mined data set, all inventors with the same company or university as applicant have been gathered in clusters. Since the priority was to find patenting research teams, a minimum of four inventors was defined, analogous to the minimum team size of the survey.

In a next step, the identified clusters were analyzed on the basis of technology field. Clusters were allocated to the specific technology fields of Medical Technology and Transport, if the inventors had 50% or more patents in Medical Technology and Transport. The retrieved data tables show inventors who have done patent applications together (as a cluster, so not

everyone has invented with everybody in the cluster) under the umbrella of a specific company (or university) and within a certain technology field - Medical Technology or Transport. The starting point of finding teams (with the help of the PATSTAT data) can therefore be either the company or an inventor. However, as the inventor can only be reached through a private postal address (available contact data in PATSTAT), it was agreed to proceed with the company contacts.

As a result, companies with patent applications in the relevant technology areas (Medical Technology and Transport) were identified for the five countries Lithuania, United Kingdom, Spain, Germany and Sweden.

Address Verification / Compilation

Both the WoS author list as well as the PATSTAT list of inventors were manually verified. Address compilation and verification was conducted by all project partners for the countries Germany, Spain, Sweden, United Kingdom and Lithuania. The corresponding R&D team of listed authors were identified through web-based searches for the public sector which has most information accessible online. Where possible, the address verification in the public sector identified the team leader as our primary contact for the recruitment process. In some cases, this manual online check produced additional contact addresses of research groups that work within the same organization (or department) but have published less or are less visible in the Web of Science. Where it was easily possible to associate the team with the respective subject areas, the team contact was included in our address file. For the private industry, team member address verification could not be done via web-based searches since private companies typically do not publish their staff /teams online. As an alternative approach, the companies resulting from the PATSTAT data mining were contacted directly. In some cases, specific associations such as the WISE Campaign (UK), women's groups in diverse professional associations facilitated the contact to the private industry. In Germany, project partner VDE and its network contacts have been crucial for contacting companies. Another approach was to contact specific departments in companies that could have an interest in the research, i.e. HR, Diversity and/or Gender Equality departments or officers.

The address verification carried out for the initial countries managed to verify the available addresses as well as amplify our initial listing of contacts for carrying out the next step, the recruitment of R&D teams for the survey.

Changes of Field Access Procedure between 1st and 2nd Wave

The procedures described in the preceding section concerns mainly the field access for the first wave of survey roll-out restricted to the initial five countries Spain, UK, Sweden, Germany and Lithuania. Since recruitment of research teams proved extremely challenging the Consortium took the decision to expand the pool of targeted countries and hence pool of possible teams to 11 more countries.

However, due to time and resource constraints two decisions were taken: first, the

recruitment for the second wave concentrated on research teams from the public sector. The very low response rate from the private sector during the first wave suggested that efforts should be concentrated on the public research sector for the additional countries, where a positive response was more likely. This implied data mining authors' addresses through the Web of Science database. Second, no manual address verification was carried out; Authors compiled from publications were contacted directly via their email without knowing their exact role within the team.

Recruiting R&D Teams

After having compiled authors' emails and company address, team recruitment was carried out by each Consortium partner in their respective countries. The recruitment of teams included a clear definition of what we understand by a team. As set out in the Conceptional Framework (D1.1, Müller et al., 2016), an emphasis on the organizational setting of team membership is central. The organizational context captures 'invisible' contributions of group members not listed as author of publications and also takes into account the effect of organizational gender equality and diversity policies on team work. Thus, a team is defined as a group of persons working towards a shared goal where each team member has a formal organizational role/relationship (e.g. in the form of an official contract with the organization). Although it is true that scientific collaboration does not stop at the boundary of the organization but spans institutions, countries or scientific fields, an organizational definition of membership is more adequate for the purpose of the survey – as it can inquire about the organizational setting. This provides rich insights especially in combination with bibliometric co-authorship analysis, the other form to define scientific collaboration. The survey data therefore provides an interesting starting point to discuss differences and commonalities between these two important definitions of team membership. Overall, recruitment of teams was carried out based upon the following criteria aiming for a minimum of 100 teams:

- Minimum size of teams is four members.
- Teams can have a mixed gender composition, but teams with only women or men are also included.
- Minimum of 20 teams per (initial) country (5x20=100).
- An additional condition for participation was to make the names of team members available. Otherwise, it would not have been possible to compile the bibliometric performance data of the team.

Recruitment of Teams in Public Organizations

Recruitment for teams in public organizations has been conducted by:

- Sending out an initial recruitment email to all addresses obtained from the WoS data

mining exercise. In case this invitation to participate in the survey was answered, a second follow-up email was sent out with explanations of the next steps.

- Sending out an initial recruitment email to personal contacts (to HR or other management staff, or team members).

Once a potential team contact was identified, the actual recruitment started:

a. Contacting the team-contact either by email or by phone. For that purpose, a guideline with introductory text regarding the purpose of project, survey and benefits, incentives for participating was provided to participants in the form of the bibliometric profile of the research group.

b. Clarifying the participation procedures with the team-contact person: distribute paper version or visiting the group in person if feasible, anonymous online survey or personalized online survey.

c. Team codes were generated by each consortium partner for their respective countries to register each team that agreed to participate.

Recruitment of Teams in Private Organizations

To access private organizations, the following steps were carried out:

- Finding direct contacts to companies listed in the PATSTAT or Web of Science field access files. This could be through personal contacts or through associated associations such as the WISE Campaign (UK), women's groups in diverse professional associations, etc. VDE was crucial in this step for Germany.

- Where email addresses were available (e.g. authors listed in the Web of Science file affiliated at a private company), the person was directly contacted with an invitation to participate in the study with her/his current team.

- Blind approach: contacting the company through official channels such as a web-contact form, phone etc. Departments that could have an interest in the GEDII project were considered as potential entry points: HR, Diversity or Gender Equality Staff, Strategic Development Managers.

Once a potential team contact was identified, the next steps for recruiting the team are the same as described for public organizations (see above).

Overall Timing and Response Rates

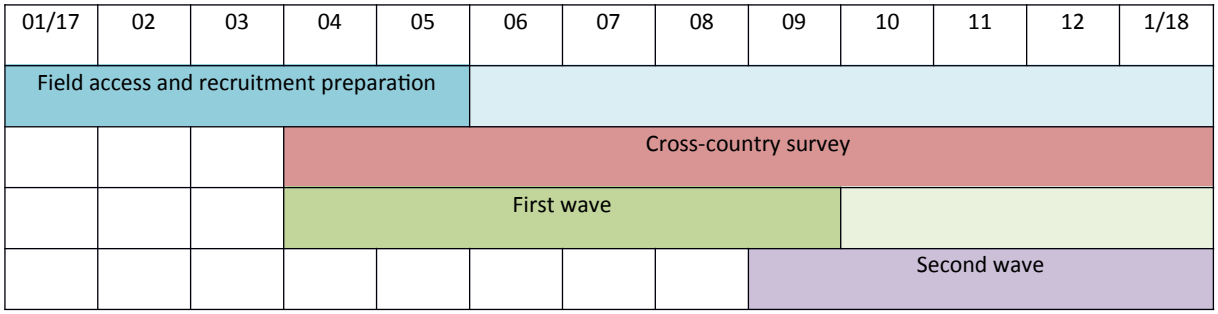
The field access preparations started in December 2016/January 2017 by each project partner for their country (Lithuania was done by CRA). The survey was launched online in March 2017.

The recruiting of teams was carried out in two waves. The first wave targeted UK, Sweden, Germany, Spain and Lithuania. Given the very moderate response rate especially from countries with a larger research and innovation sector such as the UK and Germany, the Consortium decided to initiate a second wave of recruitment of research teams from September 2017 onwards. Several factors were taken into consideration and conditioned the execution of a second wave of team recruitment:

- The project had not spent the entire foreseen budget for survey follow-ups during the first wave.
- Field access could be expanded relatively easily to other countries through data mining WoS author addresses.
- The decision to concentrate on the public sector played a further important role: given the very sparse response rate from the private industry during the first wave across all countries, it made sense to concentrate spending the rest of the available resources on the public research sector where participation was likely to be higher while also requiring much less effort.
- The use of the online survey in combination with R scripts allowed for the incorporation of new results into the analysis without any substantial additional effort, making it viable to incorporate new results as they came in, even much beyond the originally planned end of the survey in August 2017.

The main time frame for the first wave of survey roll-out was from April to September 2017. The second wave was started in September 2017. The survey was closed on 31 January 2018.

Figure 1: Timeline survey



The following tables give an overview of the overall contacts (via verified team leaders as contact, mass emails and others like HR, Diversity Departments, networks etc.) and successful responses. Spain has the highest success rate (11%), while Germany and the UK have very low success rates with less than 1%. A detailed documentation of the recruitment efforts for the primary five countries during the first wave of recruitment is available in Annex III on page 73.

	Contacts	Responses	Rate
Germany	1,960	13	0.66%
Lithuania	674	8	1.19%
Spain	669	74	11.06%
Sweden	1,618	31	1.92%
UK	4,924	8	0.16%
Sum	9,845	134	1.36%

Table 3: Summary contacts and responses 1st wave of recruitment

Countries	Selected leaders			Mass authors			Others		
	Contacts	Resp.	Rate	Contacts	Resp.	Rate	Contacts	Resp.	Rate
Germany	92	4	4.35%	1,827	4	0.22%	41	5	12.20%
Lithuania	39	7	17.95%	635	1	0.16%	0	0	0.00%
Spain	619	50	8.08%	0	0	0.00%	50	24	48.00%
Sweden	118	1	0.85%	1,500	30	2.00%	0	0	0.00%
UK	139	1	0.72%	4,771	3	0.06%	14	4	28.57%
	1,007	63	6.26%	8,733	38	0.44%	105	33	31.43%

Table 4: Contacts and responses 1st wave of recruitment – by means of approach

The second wave of recruitment started in September 2017 and was carried out by UOC and ORU. The second wave was mainly conducted via mass emails (5,747 contacts) with WoS data (authors). In some cases, selected leaders were approached. The overall success rate is 0.66% (40 teams). As can be seen, response rates fluctuate considerably between countries. Generally speaking, the response rate to the first invitation email was very low (usually below 1% for mass emailing). However, in case researchers did respond to the invitation to participate, a relatively high response rate among the team members was the norm, typically about 60 to 70%. This probably has to do with the fact that the decision to participate in our survey was backed-up by the team leader, encouraging group members to participate.

	Contacts	First Resp.	Rate 1st Resp.	Success responses	Rate
Austria	124	2	1.61%	0	**0.00%**
Belgium	642	4	0.62%	2	**0.31%**
Czech Rep.	354	2	0.56%	1	**0.28%**
Denmark	422	3	0.71%	2	**0.47%**
Finland	285	2	0.70%	1	**0.35%**
Italy	751	18	2.40%	11	**1.46%**
Netherlands	1,895	14	0.74%	11	**0.58%**
Norway	453	3	0.66%	2	**0.44%**
Poland	502	2	0.40%	2	**0.40%**
Portugal	300	7	2.33%	3	**1.00%**
Switzerland	299	6	1.34%	5	**1.67%**
Total	6,027	63	1.05%	40	**0.66%**

Table 5: Summary responses of 2nd wave of recruitment

Online Data Collection

Data collection was implemented using the Unipark platform, which is the academic program of Questback. The survey software is an industry standard solution for online feedback and survey research. Comprehensive respondent management simplifies fieldwork in terms of participant recruitment and management during the field phase. Survey status information enables targeted reminders to be sent via an integrated mail server. The Questback server park, located in Germany, is well protected within a BSI-certified data center that meets the stringent security requirements of the ISO 27001 standard for IT risk management.

"Anonymous" and "Personalized" Questionnaire versions

The Unipark platforms offers two questionnaire formats – anonymous and personalized. Despite the somehow misleading names of "personalized" vs. "anonymous", it has to be emphasized that all data was collected anonymously. The difference between the two versions is that the personalized one assigns codes to potential respondents via a URL link. This allows tracking if a certain person has already replied to the questionnaire or not – and hence targeting primarily the wave of reminders to those that have not. It needs to be emphasized that the result matrix of the survey naturally does not contain the personalized code of the respondents; it is not possible to assign data rows to individuals. The anonymous version on the other hand does not provide this response tracking feature.

In order to provide the maximum flexibility to potential respondents, our questionnaire was available in both versions. Team contacts/leaders were informed about the possibility to use

either versions. The vast majority of respondents answered the questionnaire through the personalized version. If the anonymous question was preferred, the link to the team contact questionnaire was send directly to the team leader after the first contact was established. In addition to the online questionnaire, paper copies were also available and ready to be sent out if desired by certain teams. Except for isolated cases in Germany, 99% of responses were given directly online. Since variable names and hence result matrix are identical, all questionnaires could be merged during the pre-processing step (see next section).

Finally, a fourth questionnaire was setup up based upon a close collaboration with a research institute in Spain. The original GEDII questionnaire was extended with additional variables on working conditions before being passed to the employees of the institute, including the research groups. The additional items/data was removed before being merged into the global result set.

Team IDs and Response Tracking

A key issue concerned the generation of a group code in order to identify respondents that belong to the same team. Once an agreement with the team contact was reached to participate, a Team ID was generated and distributed either through the Unipark platform (for the personalized questionnaire version) or via a group specific submission URL (for the anonymous version via the team contact).

Weekly updates on survey response tracking were provided by UOC in order to monitor response rates across countries and compare against the overall target of 100 teams.

Data Pre-Processing Steps

All data pre-processing and analysis has been carried out using the R statistical package[5]. Apart from enabling the Consortium to incorporate incoming survey results on a continuous basis, it assures maximum transparency and reproducibility regarding our results. Scripts used for data pre-processing will be published within the Open Access scheme of the GEDII project (see next section for details). .

The main pre-processing steps carried out were:

- Merging the three different team members survey result sets into one: the personalized survey, the anonymous survey, and the single research institute survey.
- Removal of meta-data information regarding participant response behavior and technical platforms
- Revision and anonymization of open text responses
- Recoding “Other” text fields for highest education, disciplinary background, current role, etc.

5 See “The R Project for Statistical Computing” https://www.r-project.org/

- Error correction for certain Team ID codes
- Merging team contact, team member and bibliometric/patent performance measures into a single dataset.

Disclosure Control and Open Access

Although the GEDII project is participating in the Open Access Pilot of the Horizon 2020 project and planning to make as much of its data accessible to the public as possible, the raw survey dataset has been excluded from the OA policy due to privacy concerns.

The GEDII project has consulted with an external disclose control expert to explore the possibilities of publishing the dataset without violating any privacy concerns of the participants. In general, two possibilities exist: first, to reduce the number of variables in order to prevent identification of participants. By simply combining several socio-demographic variables such as age, sex, team role, highest qualification and others the identity of participants can be reconstructed quite easily, especially since team members pertain each to a relatively small group-based sample. It is entirely plausible for someone to search first her/his entry, and through the group code retrieve all other team members and then identify individual responses by a simple combination and exclusion criteria of age, sex, role. In order to avoid this type of disclosures, basic socio-demographic variables would have to be removed which would limit the utility of the dataset substantially.

Second, statistical noise can be introduced into different variables that do not affect the overall distribution of values but inserts uncertainty as to which a given numeric value reflects the actual response of a team member. Although this leaves the result dataset complete as no variables need to be removed, it does not address our basic concern that participants could potentially be confronted with their survey responses – as if they were 100% certain. It cannot be guaranteed that the introduction of statistical noise into the dataset will be recognized by others who might use it in unethical ways.

Give these two options and the unsatisfactory possibilities to protect the privacy of team members responses, the Consortium decided *not to publish the raw survey data* file. The data will be used for GEDII internal reports, analysis and publications, that is, only on an aggregated level. The project will publish all scripts that have been used to pre-process, analyze and achieve the overall results of WP4. This will happen on the GEDII repository and website as stipulated in the D1.3 Data Management Plan.

Chapter 2 - Performance Indicators

Ulf Sandström, Sandra Klatt

Bibliometric Identification & Analysis of Team Performance

One condition for participation in the GEDII survey was to make available the current list of team members to the Consortium. For public universities or research organizations, this was relatively unproblematic since most groups have the list of team members published on their website. For private industry, however, this was a concern and probably contributed to their very low overall participate rate.

Based on team member names, we have identified publications in one of the bibliographic databases, namely the Web of Science (WoS) provided by Clarivate Analytics that consist of international scientific publications. The procedure for this and the analytics used is described in the following section.

Bibliometric Identification

One of the practical problems is that of constructing the basic bibliography of the units under assessment. This is not a trivial question as papers from one institution might be headed under several different names (de Bruin & Moed, 1990) and due to the problem of homonyms for individuals there is need of careful identification of each researcher. The identification of papers included in this exercise has been done on the basis of names given from the survey recipients nominated by the team leader. This was all the information given even if many groups have websites and give at least examples of their publication activity.

Searches were done in the online version of Web of Science. Each download was created using all variants of names, full names and last name plus first initial for the team. In the case of typical Spanish names, like Anna Lucia Garcia Torres, we in principal used the first name Anna and the first last name Garcia. In many cases, the recall with that strategy was quite large, seldom more than 25,000 articles. In those cases, subject categories were used to delimit the result: large subject categories with many articles and many authors like “Astronomy and Astrophysics”, “Physics, Particles and Fields”, “Physics, Nuclear” and others alike were deleted and thereby the recall could be taken down to less than 10,000 articles.

With that result started the more detailed identification. Using a parser for the download files a document with all authors separated and with all possible information, organizations addresses etc. connected to the name made it possible to sort out the article shares that were considered as belonging to members of the teams involved in the GEDII survey. The fact that WoS included full name and organizational names is one precondition for the identification. Also, using mainly Internet sources; e.g. searches for name and organization or publications and/or CVs made the identification possible.

After presenting the first results there was a round of validation where the underlying data was scrutinized by unit leaders and/or each researcher.

Coverage of scientific and technical publications

Explorations made by Carpenter & Narin (1981), and by Moed (2005), have shown that the WoS database is representative of scientific publishing activities for most major countries and fields: "In the total collection of cited references in 2002 ISI source journals items published during 1980-2002, it was found that about 9 out of 10 cited journal references were to ISI source journals" (Moed 2005:134). It should be emphasized that the database mainly covers international journals, and that citations analysis is viable only in the context of international research communities. National journals and national monographs/anthologies cannot be accessed by international colleagues. Consequently, publications in these journals are of less interest in a citation exercise of this type. As long as we are calculating relative citation figures based on fields and sub-fields in the WoS database the inclusion of national or low cited journals will only have the effect of lowering the citation scores, and is, therefore not an alternative.

In some studies, it has been suggested that there are two distinct populations of highly cited scholars in social science subfields — one consisting of authors cited in the journal literature, another of authors cited in the monograph literature (Butler, 2008). As the Web of Science has a limited coverage of monographic citing material, the latter population will hardly be recognized in the database (Borgmann & Furner, 2002). But, in the overall sense, Web of Science works well and covers most of the relevant information in a large majority of the natural sciences and medical fields, and quite well in applied research fields and behavioral sciences (CWTS, 2007:13). However, there are exceptions to that rule. Considerable parts of the social sciences and large parts of the humanities are either not covered very well in the Web of Science or have citations patterns that do not apply for studies based on advanced bibliometrics (Butler, 2008; Hicks, 1999; Hicks, 2004).

Matching of references to articles

The WoS database consists of articles and their references. Citation indexing is the result of a linking between references and source (journals covered in the database). This linking is done with an algorithm, which is conservative and the consequence is non-matching between reference and article. Several of the non-matching problems relate to publications written by 'consortia' (large groups of authors), to variations and errors in author names authors, errors in initial page numbers, discrepancies due to journals with dual volume-numbering systems or combined volumes, to journals applying different article numbering systems or multiple versions due to e-publishing. Approximations indicate that about seven per cent of citations are lost due to this conservative strategy. The current analysis is based on an alternative algorithm that addresses a larger number of the missing links.

Self-citations

Self-citations can be defined in several ways; usually with a focus on co-occurrence of authors or institutions in the citing and cited publications. In this report the recommendation to eliminate citations where the first-author coincides between citing and cited document is applied (Aksnes, 2003a). If an author's name can be found at other positions, as last author

or middle author, it will not count as a self-citation. This more limited method is applied for one reason: if the whole list of authors is used, the risk for eliminating the wrong citations will be large. On the down-side we will probably have a senior-bias with this method; this will probably not affect units of assessments, but caution is needed in analysis on the individual level (Adams, 2007: 23; Aksnes, 2003b; Glänzel et al., 2004; Thijs & Glänzel, 2005).

Time window for citations

An important factor that has to be accounted for is the time effects of citations. Citations accumulate over time, and citation data has to cover comparable time periods (and within the same subfield or area of science, see below). However, in addition to that, the time patterns of citation are far from uniform and any valid evaluative indicator must use a fixed window or a time frame that is equal for all papers. The reason for this is that citations have to be appropriately normalized. Most of our investigations use a decreasing time-window from the year of publication until December 2016. However, some of our indicators are used for time-series and in these cases a fixed two-year citation window is applied. Publications from the year 2010 receive citations until 2012; publications from 2011 receive citations until 2013 and so on.

Fractional counts and whole counts – the Frac P indicator

In most fields of research, scientific work is done in a collaborative manner. Collaborations make it necessary to differentiate between whole counts and fractional counts of papers and citations. Fractional counts give a figure of weight for the contribution of the group to the quantitative indicators of all their papers. By dividing the number of authors from the unit under consideration with the number of all authors on a paper, we introduce a fractional counting procedure. Fractional counting is a way of controlling for the effect of collaboration when measuring output and impact. In consequence, from Frac P-figures we can see to what extent the group receives many citations on collaborative papers only, or if all papers from the group are cited in the same manner.

Fields and sub-fields

In bibliometric studies the definition of fields is generally based on the classification of scientific journals into more than 250 sub-fields, developed by Thomson Reuters. Although this classification is not perfect, it provides a clear and consistent definition of fields suitable for automated procedures. However, this proposition has been challenged by several scholars (e.g. Leydesdorff, 2008; Bornmann et al. 2008). Two limitations have been pointed out: (1) multidisciplinary journals (e.g. Nature; Science); and (2) highly specialized fields of research.

Clarivate Analytics classification of journals includes one sub-field category named “Multidisciplinary Sciences” for journals like PNAS, Nature and Science. More than 50 journals are classified as multidisciplinary since they publish research reports in many different fields. Fortunately, each of the papers published in this sub-field are subject specific, and, therefore, it is possible to assign a subject category to these on the article level

– what Glänzel et al. (1999) calls “item by item reclassification”. That strategy has been used in this report.

Normalized indicators

During the latest decades, standardized bibliometric procedures have been developed to assess research performance. Relative indicators or rebased citation counts, as an index of research impact, is widely-used by the scientometrics research community. Research teams in the United States and in Hungary popularized the central concepts of normalization during the 1980s. The method applied here builds on a statistic calculation at the paper level and on a year to year basis. Publications from 2008 are given a nine-year citation window (up to 2016). Because of these (small) differences, we name the indicator NCS (Normalized Citation Score), but, it should be underlined that it is basically the same type of indicator as the one today used by bibliometric groups e.g. in Leiden and Leuven.

Citation normalization

In this report normalization of citations is performed in reference to two different normalization groups: WoS sub-fields and journals. When normalizing, we also take publication year and publication type into account. A normalization group might then look as follows: papers of the type “review” within the sub-field “Metallurgy & Metallurgical Engineering” published in 2002.

The most commonly used normalization type was developed by Schubert, Glänzel and Braun during the 1980s (1988). Simultaneously the Leiden group (Moed et al. 1988) developed a variant methodology with the “crown indicator”. These normalized indicators are typically named CPP/JCS or CPP/FCS depending on whether the normalization is carried out in relation to journals or sub-fields.

In our calculations of “Field normalized citation score (NCSf)” and “Journal normalized citation score (NCSj)” we the following formulas. First, the field normalized citation score (NCSf):

$$\frac{1}{P}\sum_{i=1}^{P}\frac{c_i}{\left[\mu_f\right]_i}$$

where c is the number of cites to paper i and $[\mu_f]_i$ is the average number of citations received by papers in the normalization group of paper i. Our calculation treats all papers equally, while other formulas often gives higher weight to papers in normalization groups with higher reference values, cf. Lundberg (2006), s. III:3; cf. Visser et al, (2007).

When calculating the “Normalized journal citation score (NCSj)” we use the following formula:

where $[\mu_j]_i$ is the average number of citations received by papers in the journal of paper i and $[\mu_f]_i$ is the average number of citations received by papers in the sub-field of paper i.

Top percentiles

The above normalized indicators give a good account of performance. Nonetheless, we might need simple figures that indicate the excellence of the group in just one number; e.g. the *Top 10%* is an indicator of that type. As an indicator, it expresses the number of publications within the top 10% of the worldwide citation distribution of the fields concerned for the research group. This approach provides a better statistical measure than those based on mean values. It is suggested that this indicator should be used together with other indicators and in this case as "*a powerful tool in monitoring trends in the position of research institutions and groups within the top of their field internationally"* (CWTS, 2007: 25*).* If the research group has a high proportion of articles in the Top 10% they will probably have a large impact on their research field.

FAP - Field Adjusted Production (Waring)

It is well known that medical researchers tend to produce more, often shorter papers where methodology and prior knowledge is codified in citations and engineering scientists produce less frequently and have fewer cross-references (Narin and Hamilton, 1996; Glänzel, 1996) These field differences affect both citation rates and mean number of papers per author, and the differences are to some extent explained by shifting coverage of fields in the ISI database.

In order to compute a field adjusted factor we have to meet certain obstacles: publication databases give information on the authors that are active during a given period, but not all the potential authors. As the non-contributors (non-publishing authors) are unknown it is difficult to create an average publication rate per author taking all potential authors into account. There is a proposed mathematical solution to this problem: bibliometric data are characteristically "Waring distributions" (Schubert and Glänzel, 1984). With information on the distribution of author publication frequencies, an estimate of the average publication rate per researchers (contributors and non-contributors) in a given field, country or such can be computed (Telcs, Glänzel and Schubert, 1985).

The approach is based in mathematical statistics and a theoretical discussion can be found in papers by Braun, Glänzel, Schubert and Telcs during the second half of the 1980s. Inspired by Irwin (1963) they showed that bibliometric material had the properties of "Waring distributions". A straight line should be obtained by plotting the truncated sample mean of these distributions (Telcs, Glänzel and Schubert, 1985). By extrapolating this series towards zero, the numbers of non-contributors are included. The intercept of this line is the average productivity of all potential authors during a given period of time (Braun, Glänzel and Schubert, 1990). In our model this value is used as a reference value and is computed per field for Nordic data. Several successful empirical tests using the Field Adjusted Production (FAP) model have been implemented (see Koski et al. 2016 for further clarification).

The Field Adjusted Production is calculated as follows:

$$\sum_{i=1}^{n} \frac{P_i}{r_i}$$

where P_i is the number of papers in field *i* and r_i is the (estimated) average number of papers per researcher in field *i*. The estimation of the reference values is performed for each field by first calculating the s-truncated sample mean of each field as follows:

$$\frac{\sum_{i=s}^{\infty} i\, n_i}{\sum_{i=s}^{\infty} n_i}$$

where n_i is the number of authors having exactly *i* papers. The truncated sample means are plotted versus s and the intercept of the fitted line, using weighted least squares linear regression, is used as an estimate for number of papers per author for the entire population The regression is weighted using weights proposed by Telcs et al. (1985).

When applying this model, authors with an address at Nordic universities were used as reference data. All Nordic universities (Sweden, Finland, Denmark and Norway) were used in the operation which yielded almost 400,000 unique authors over a four-year period, (2008–2011). Homonyms and similar problems were taken care of by automatic procedures in combination with manual procedures. all Nordic universities (Sweden, Finland, Denmark and Norway) and the operation yielded almost 400 000 unique authors for a four-year period, e.g. 2008–2011.

The about 250 WoS-categories create too small samples when Nordic authors are used for creation of productivity data. There are several alternative ways of producing macro classes (e.g. SPRU classes or the Thomson ESI field categories). In this case, all journals were clustered using inter-citations as proximity values (Boyack and Klavans, 2006), and the least frequent relation were decisive in order to distinguish, as far as possible, between basic and applied sciences. It has been shown by Rinia, van Leeuwen, Bruins, van Vuren and van Raan (2002) that applied sciences tend to cite back to more basic sciences, not the other way around. The clustering procedure was based on the SLM (smart local moving) algorithm (Waltman &, van Eck 2013) and created five macro classes (fields).

Percentile Model

Relative citation indicators – based on averages were introduced already in the 1980s, but since then not much has happened except for different ways to calculate the indicator (Lundberg, 2006). The use of size-independent indicators continued to be the normal procedure up until quite recently. Indicators where the number of publications is of no importance for the bibliometric value has one negative feature as it overlooks constant good performances and visibility of researchers. A researcher who produced highly cited articles during the period of 2008-2010 will be none the worse as a consequence of publishing a number of non-cited articles in 2011 and 2012. But, in our view, the amount of articles and

the level reached in the first period will not diminish. When assessing a group of researchers and performances we should therefore add performances to each other's instead of creating an average of all articles where there is a highly skewed distribution in the background.

The basis for percentiles is that each article is ranked, based on its citations, within their respective fields of science, defined by the subject classes (about 250) listed in Web of Science, and is divided into percentile groups (the 1 per cent, 5 per cent, 10 per cent maximum rated, and so on). Measurements based on percentiles have the advantage that they are not affected by biases in the distribution of citations (Rousseau, 2005). In some disciplines, there are a few publications with a very large number of citations pulling up the average (Seglen, 1992, 1998), so that 70 per cent of articles in the field are below average citation-wise.

The percentile indicator is translated to a point score for each article based on probability, depending on whether an article belongs to the most cited per cent or belongs to another percentile group. Those in the top one per cent are awarded 100 points; the top five per cent get 20 points, and so on (see Table 6). An article that belongs to the 50 per cent least cited gets one point, implying that a researcher can never lose points by publishing an article during the period under study.

Percentile (per cent)	Points
0.01	100
0.05	20
0.10	10
0.25	4
0.50	2
1.00	1

Table 6: Points given per percentile group

The number of points that each article thus obtains is adjusted by the FAP-method for field adjustment of production (Sandström & Sandström 2009). This is done in order to compensate for differences in scientific production behaviour between research areas. All journals in the Web of Science have been categorized into five areas (Applied Sciences, Natural Sciences, Health Sciences, Economic & Social Sciences, and Arts & Humanities). Using the Waring method then makes it possible to create a FAP-factor (Koski et al. 2016) which can be multiplied with the citation points. The measure we use is thus a composite measure of a single value expressing productivity (number of papers) and level of citations (quality). The advantage, compared to other similar measures, such as the h-index, is that this measure is designed to be used over and between all areas of science as is the case when we want to compare performance at the university level and across different faculty areas.

The researchers identified according to the methodology described above, receives a score based on article fractions and their citations based points. As this has been used for the whole Swedish research community we have a ranking of all 48.000 Swedish researchers

during the four-year period. This gives a basis for benchmarking in order to specify where a specific group of researchers is located in the Swedish distribution over percentiles of performance. For further information on this, Sandström & Wold (2015).

Percentile Level

Based on the identification of unique and disambiguated a file of Swedish researchers 2008-2012 was created by Sandström. Based on the Percentile Model these researchers have been ranked in percentiles and percentile groups. This can be used as a benchmark for performance evaluation: To which group of performances are our team and our number of fractionalized articles and normalized citations equivalent?

For this procedure the total of the group performance is divided by the number of senior researchers per team. Seniority can be defined as being a publishing author over at least five years during the period 2008-2016.

An anonymous example is attached in Annex IV on page 78.

Patent Based Indicators

A further interest next to the bibliometric indicators was the data mining of patent activities of the teams. Due to the quality of the input data (information about the team members) and the characteristics and logic of the PATSTAT database, it was only possible to count applications per team. Since we only have person names (first names and last names) as data to match with the PATSTAT database, it is to be assumed that by matching the names alone, a certain number of matches can be found, however it is high uncertainty factor about the correctness, because there is no cross-check possibility if the matched person in PATSTAT is really the team member. In case two different persons have the same name, there is no information in the database itself to disambiguate these inventors. On the other hand, there is a certain error rate with 'person_id' and the allocated inventor information. As it happens, e.g. different spellings in the inventors' address, change of address or typing errors lead to different 'person_id's for the same person.

In order to get valid results when data mining person names, we decided to cross check the application's count. In other words, only applications were counted per team, which have at least two or more team members as inventor as a match. Of course, due to this condition (two team members) patents are not counted which have only one team member as inventor on the application. Another problem presents the time gap when working with the PATSTAT database. The application data is only complete up to the year 2012. Since survey responses pertain to teams in 2017, recently submitted Patents are not covered. This large time-gap between the original submission of a patent before 2012 and the current survey also implies that team composition might have changed considerably. Hence, the patent performance indicator as used in the current report tells us little about the actual performance of the current team. However, as the current patenting activities of the team surveyed becomes available in the future versions of PATSTAT, an additional analysis would

clearly address this issue. In the following section the data mining procedure is described in more detail.

Step 1: Finding team members in PATSTAT

Based on names (first name and last name) from teams that have answered the survey, a list of team member names with group IDs was the basis of the inquiry. For the person names on that list, it was searched for matching person entries in PATSTAT. These would be used in a next step to find applications related to the persons from the initial list. To look up the person names from the list in PATSTAT, a subset of the table tls906_person was created, enriched by EEE-PPAT data[6]. So, persons from tls906_person were included in the new table gedii_inventors_201711, if all the following conditions were fulfilled:

- a matching entry existed in eee_ppat_2016a
- pers_appln.invt_seq_nr > 0 which means the person is an inventor, not an applicant

The script create-table_gedii-inventors_2017-11.sql was used to create the new table[7].

Step 2: Looking Up Inventors

To look up the person names from the initial list, the list was manually converted into a CSV file, and then parsed by a PHP script. The script extracted the first and last names from the list, combined them in the form last name - first name, and searched for this combined name string in the column doc_std_name in table gedii_inventors_201711. If there was more than one match in gedii_inventors_201711 for a name, all matches were used subsequently.

A new column person_id was added to the result list, as an extension of the original list. If matching persons were found in PATSTAT, their person IDs were written to the new column. This yielded 211 persons names with matches in PATSTAT and 1,067 person names without a match.

Step 3: Looking up group applications and finding applications related to inventors

For inventors with at least one matching person entry from PATSTAT, for each psn_id all related applications were searched, where:

- earliest_filing_year was between 2001 and 2012
- invt_seq_nr was greater 0 (making the person an “inventor” instead of an “applicant” for that application)

The result of this step was a list of applications for each person id, reflecting the applications for the person entries found in PATSTAT. The column NumberOfApplications was added to the result sheet, which denotes the total number of applications found for a specific person ID. The application IDs were not saved permanently, but directly handed over to the next

6 For details about EEE-PPAT (ECOOM-EUROSTAT-EPO PATSTAT Person Augmented Table) data see https://www.ecoom.be/nl/EEE-PPAT

7 The scripts used for the PATSTAT data processing will be made available in the data repository of GEDII.

processing step inside the script.

Finding of Applications Shared Within Groups

For all members of a specific group, the found applications were filtered by the script for applications related to at least two group members.

Note that all person IDs found for a specific name in the group were considered standing for one group member only, so if an application showed up more than once for a single group member because of its various person IDs, it would still only count as one for the group.

The column appln_id was added to the result sheet: it contains only IDs of applications, which were shared within the group (meaning that at least two group members would be related to that application). As a result, twelve teams have been found with the following patent counts:

Group	Country	Sector	Public/Private	Patents per Group
1	Spain	Medical Technology	Public	2
2	Spain	Medical Technology	Public	17
3	Spain	Medical Technology	Public	7
4	Spain	Transport	Public	7
5	Spain	Transport	Private	1
6	Netherlands	Transport	Public	5
7	Sweden	Medical Technology	Private	27
8	Sweden	Medical Technology	Private	71
9	Sweden	Medical Technology	Public	5
10	Sweden	Medical Technology	Public	1
11	Italy	Transport	Public	1
12	Italy	Transport	Public	19

Table 7: Results PATSTAT data mining

It can be assumed that the low number of teams is due the fact that mostly public institutions have participated in the survey, but it is primary the private sector who is involved in the patent activities (about 90% of the applications are done by the business sector BES). In addition to that, the dataset was searched up to the year 2012, so that relatively new teams in our samples or significant team member changes up to now lead to lower numbers of matches.

Chapter 3 - Relating Gender Diversity to Research Performance

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One key question addressed by the GEDII project is the potential effect of gendered processes on team performance. In the following section, we explore the relationship between gender diversity and performance. The analysis is conducted at the team level, since the aim is to relate gendered processes within the team to team productivity measures obtained through bibliometric datamining.

The impact of gender diversity on research performance

Research on the impact of gender diversity on performance is inconclusive (Müller et al. 2016). Several studies indicate that a good gender balance is beneficial for corporate performance and innovation processes within teams (Curtis, Schmid, & Struber, 2012; Hoogendoorn, Oosterbeek, & van Praag, 2013; McKinsey & Company, 2008, 2016). Gender diversity in research has largely been treated as synonymous with the sex-composition of a team. This can either take a gender-neutral perspective (i.e. gender balance or the proportion of the under-represented sex on teams) or a gendered perspective (i.e. women's representation on teams). However, counting heads only provides a snapshot of the current team and does not consider gendered processes within a team.

Research studies have shown there is a productivity gap between women and men academics (Aiston & Jung, 2015; Busolt & Kugele, 2009; Müller et al., 2016). One reason behind this gap might be that women academics tend to have less time for research due to teaching load or academic citizenship and service (Link, Swann, & Bozeman, 2008; Winslow, 2010). Consequently, the ratio of women within a team might have a different influence on the overall team-performance. We therefore hypothesise:

H1a: Women's representation in teams is negatively related to research performance.

Some research has shown that performance is negatively affected regardless of whether it is women or men that are under-represented (Gratton, Kelan, Voigt, Walker, & Wolfram, 2007). Within R&D more specifically, gender diversity within teams has been linked to more novel solutions and radical innovation (Bear & Woolley, 2011; Díaz-García, Gonzalez-Moreno, & Saez-Martinez, 2013; Østergaard, Timmermans, & Kristinsson, 2011). However, a meta-analysis found a negative relationship between gender diversity and a team's task performance in the form of output and productivity (Schneid, Isidor, Li, & Kabst, 2015). That study, however, does not distinguish between the different nature of tasks. Evidence suggests that gender diversity can have a positive effect, but predominantly within teams that carry out creative, innovative tasks such as writing scientific publications (Campbell, Mehtani, Dozier, & Rinehart, 2013; Østergaard et al., 2011). Because the tasks carried out in a research context are highly specialised, creative and potentially demanding – a non-routine task in Perrow's (1967) classification – we assume that the ability for novel solutions and

radical innovations are positively linked to gender balance. We therefore hypothesise that women's inclusion in research teams will have a positive effect on research performance, but only up to a point, and that in fact gender-balanced teams are most performant (quasi-curvilinear effect):

H1b: Gender balance within teams has a positive effect on research performance.

The GEDII project aimed to go beyond counting heads and extend not only the concept of gender diversity but also how it is measured. To this end, the Gender Diversity Index not only includes measures of gender representation but also of gender attrition along seven grounds of diversity: age, education, care responsibilities, marital status, team tenure, contract type and seniority (Humbert & Guenther, 2017, 2018). This is in line with the argument that it is important to move beyond representation and to focus on inclusive climates within organisations and teams (Mor Barak et al., 2016; Shore, Cleveland, & Sanchez, 2017).

The scores of the Gender Diversity Index reward inclusive teams (Humbert & Guenther, 2018). Shore et al. (2011) define inclusion as a setting in which individuals can retain their uniqueness while also being treated as insiders at the same time. Within an inclusive climate, individuals can bring in their full spectrum of talent (Mor Barak et al., 2016). In an inclusive environment, women and men get the opportunity to realise themselves, regardless of their individual diversity characteristics. Shore et al. (2011, 2017) suggest that an inclusive environment is conducive to team performance. We therefore hypothesise:

H1c: The Gender Diversity Index is positively related to research performance.

Thus far the sex-composition of a team and gendered processes in teams have been considered separately. However, this fails to account for the intertwined nature of those aspects. The sex-composition of a team is co-shaped by gendered processes as those impact recruitment and retention processes. Then again, a focus on gender-inclusiveness alone does not provide information on whether teams are affected by being either women- or men-dominated. Moreover, while an inclusive team environment as well as gender balance should be conducive for team performance, a high representation of women could be detrimental. Consequently, to fully be able to assess the influence of a gender-inclusive team setting it is necessary to also account for the sex-composition of a team, both in terms of the representation of women and gender balance. We therefore hypothesise:

H2: Gender diversity within teams is positively related to research performance, when controlling for the representation of women and gender balance.

Measures of gendered processes within teams provide little information about the wider team culture and team climate. Cultural aspects that affect team work include hard-to-change belief systems that condition work in groups such as such as gender stereotypes. Team climate refers to the quality of social relations at work.

Gender stereotypes influence the perception of a person's status and performance (Müller et al., 2016). Research on stereotype threats shows that stigmatised groups – as women are in the context of science, technology, engineering and math (STEM) – underperform if existing stereotypes are not tackled (Harrison, Stevens, Monty, & Coakley, 2006; Shapiro & Williams, 2012; Walton, Murphy, & Ryan, 2015).

Work climate – Van Knippenberg et al. (2013) argue that a team's diversity mindset influence its capabilities to benefit from its diversity. Consequently, if a team provides an environment that is safe for minorities – such as women in STEM – to express their opinions and to work in, the overall team performance might benefit from it. Additionally, an unwelcoming work climate could decrease team effectiveness. For instance, Raver and Gelfand (2005) showed that ambient sexual harassment and sexual hostility increase team conflict. Gender diversity within teams may construct a safe work climate, which in turn can increase performance.

Power disparity – Depending on whether teams see cultural differences as an important source influences not only the power distribution within the team but also to what extent individuals perceive their self- and group-efficacy (Ely & Thomas, 2001). In other words, the perception on how much a team member can influence and co-shape team processes affects intrinsic motivation and therefore also performance. Teams that are more gender diverse may benefit from low levels of power disparity, which in turn can increase research performance.

Team climate – Research shows that team climate, in its different expressions, influences team effectiveness and performance (Mathieu, Maynard, Rapp, & Gilson, 2008). Teams with an innovative team climate – that is teams that share a vision, have a strong task-orientation, where members feel they can participate and where there is strong support for innovative practices – are positively linked to the speed of innovation (Pirola-Merlo, 2010). Furthermore, a collaborative team climate fosters creativity within intrinsically motivated teams (Zhu, Gardner, & Chen, 2016). Teams that are more gender diverse may generate a climate that is more diverse and there more supportive of innovation, which in turn positively affects performance.

Leadership style – The style and behaviour of team leaders are also very important when it comes to team processes (Guzzo, R. & Dickson, 1996; Müller et al., 2016). For instance, autocratic leadership style and power concentration in formal team leaders can reduce the communication within teams and therefore negatively affect team learning and team performance (Tost, Gino, & Larrick, 2013). At the same time, shared leadership approaches have been positively linked to team performance (D'Innocenzo, Mathieu, & Kukenberger, 2016). Gender diverse teams may be associated with more diffuse and/or democratic management styles, which in turn fosters greater performance. We therefore hypothesise:

> *H3: Gender diversity within teams positively influences research performance, when controlling for the representation of women, gender balance, gender stereotypes, work climate, power disparity, team climate and perception of leadership style.*

Furthermore, the wider organizational working conditions in which team members operate influence the effect of gender diversity on research performance. Thus, work-life balance or parental leave policies as well as the availability of permanent vs temporary working contracts affect women primarily as main care givers (Goulden, Mason, & Frasch, 2011; Hardy et al., 2016; Murgia & Poggio, 2019). Similar, the time available to dedicate to research vs more administrative or teaching responsibilities can also affect research performance – with a detrimental effect for women (Guarino & Borden, 2017). We therefore hypothesise:

> *H4: Gender diversity within teams positively influences research performance, when controlling for the representation of women, gender balance, time dedicated to research, care responsibilities, percentage of temporary contracts.*

Methodology

In this section, we describe the two approaches adopted and the case selection as well as different measures used to test the hypotheses set out above, except for those that were already described in the methodology section of Chapter 1 of this report. We then outline the modelling procedure used in the analysis.

Case selection

To gain a deeper insight on gender diversity, team dynamics and their relationship to team performance the survey aimed for a very high in-team response rate, ideally 100% of team members. To minimise the standard errors of estimates, only teams which met the following criteria were used for the calculation of the Gender Diversity Index: 100% response rate for teams with 4 respondents, 50% response rate for teams with 5 to 9 respondents, and 40% response rate for teams with 10 or more respondents (101 out of 159 teams).

Measures

Gender diversity – Gender diversity is measured through the Gender Diversity Index. The Gender Diversity Index was developed within the framework of the GEDII project to capture the effects of gendered processes within a team (Humbert & Guenther, 2017, 2018). It consists of a composite measure that summarises the gender representation and attrition within teams across seven grounds of diversity. This measure is bound between 0 and 1, where 1 stands for high levels of gender inclusiveness. Since the GDI in its nature as a composite index captures a lot of information in one single number, a complementary analysis has been carried out that examines each individual pillar of the Gender Diversity Index and their relationship with research performance separately.

Gender representation – Closely related to gender diversity is the gender representation of women (and men) on teams and the resulting gender balance. Given the special interest of the GEDII project regarding the influence of gender on research performance, gender-based information is available across several sets of variables:

	Gender representation	Data source
A	Regarding all recruited team members; gender distribution of complete team.	Recruitment. Manually assigned gender-based upon research group member first name and web lookup.
B	Regarding questionnaire respondents only	Questionnaire data
C	Regarding all team members that have contributed to the bibliometric record.	Manually assigned, then filtered for those team members who have publications based upon bibliometric datamining
D	Regarding all bibliometrically defined "seniors" [8]	Manually assigned, then filtered for those team members that have a "senior" publication record.

For the main section of this chapter, the gender representation of *the most complete information available* will be used, based upon the manually assigned gender for the entire recruited teams (using the first name of all researchers). This corresponds to option A in the above table. In selected cases, additional tables are provided in Annex I illustrating the effects of using other gender distributions (option B-D). This becomes especially pertinent in the case of models that incorporate the Gender Diversity Index as predictor, since the Gender Diversity Index' scores have been calculated using data based upon the respondents only.

Research performance – Research performance is operationalised through two measures used in bibliometric studies. The first is Field Adjusted Production (FAP), which uses a methodology for normalisation to field specific publication standards across different subject areas and stands for the relative quantity of research output of a team (Koski, Sandström, & Sandström, 2016). As such, FAP estimates of how many actively publishing researchers a team is made off, based on the publication record from the team. For instance, where a team consists of four senior researchers, it is expected to have a FAP score of four. If that same team, however, achieves a score of five this would suggest they outperform similar teams in their area of research as they produce as many publications in their area of research as normally would be expected from five senior researchers. The second is based on the Percentile Model (PM, for more details see Chapter 2). The Percentile Model (PM) builds on the FAP and takes into account the number of citations obtained and ranks them within their specific subject area into percentile groups (top 1%, top 5%, etc…). The higher the PM score, the more likely is that the output of a team belongs to the top research groups within a field. For instance, if a team's publications are mainly amongst the top 1% of all

8 "Seniors are assigned based upon bibliometric information based upon the following algorithm: 1) at least 2.75 points in Sum (column G=PM5) and at least 3 yrs of publishing activity. The score of "2.75" has been derived from testing the level of TOP25 % of Swedish researchers (borderline). Time window of publication is based upon 5 years (2012-2016)". Source: 'gediiccs' R package version 1.5.1, 2019.

cited publications within their area of research, they would achieve one of the highest PM scores, while teams with few citations would be on the bottom end of the PM score (Sandström & Wold, 2015). So as to increase precision due to rounding, FAP and PM scores are multiplied by 1000 in the modelling.

Team processes and dynamics – The measures used to capture gender stereotypes, work climate, team influence, team climate and the perception of leadership style are described in the methodology section of this report (Chapter 1). These measures are based on individual level data and aggregated at team level after reliability checks across items.

Control variables

The sample used for the analysis results from the amalgamation of two data sources: the cross-country survey and bibliometric datamining. Controls are applied from the two sources. FAP is a measure of productivity that is team size dependent – the larger the team, the more seniors it includes – the higher the productivity of the team. Therefore, it is important to distinguish between the effect of team size upon performance and the effect of "seniority" upon performance. Senior members of the team are considered to be those that contribute substantially to the publication record while other team members probably do so to a lesser extent. Thus, both team size as well as the percentage of senior members within the team (defined in terms of bibliometric information[9]) are used as control variables. In addition, the percentage of team members that are unlikely to have contributed to the publication record are also accounted for with an extra control variable: "Percentage of Non Bib Role". These team members generally are either MA students or Administrative staff, or have joined the team very recently and thus are unlikely to have contributed to the existing bibliometric track record. An additional control variable uses a questionnaire-based definition of seniority, namely average years of experience in the field.

9 See previous footnote for information on its calculation.

	FAP5Y1000_Nov18	PMM5Y1000_Nov18	Index.6	TL_PercSeniorBib_Nov18	TL_PercNonBibRole	TL_Experience	teamsize	TL_PercWomenBib	TL_PercWomen	TL_PercRespWomen	TL_GenderBalance	TL_Gstereo	TL_Wclimate	TL_PInfluDisp	TL_Tclimate	TL_Leadstyle	TL_TimeTeam	TL_TimePub	TL_PercCareResp
PM5Y1000_Nov18	0.842***																		
Index.6	0.218*	0.147																	
TL_PercSeniorBib_Nov18	0.594***	0.568***	0.079																
TL_PercNonBibRole	-0.179	-0.111	-0.018	-0.197															
TL_Experience	0.287**	0.161	0.169	0.354***	-0.658***														
teamsize	0.477***	0.383***	0.362***	-0.117	0.072	0.002													
TL_PercWomenBib	-0.016	0.089	0.274**	0.106	-0.090	0.043	0.003												
TL_PercWomen	-0.050	0.043	0.371***	-0.008	0.066	0.013	0.092	0.830***											
TL_PercRespWomen	-0.084	0.014	0.329**	0.011	0.088	-0.025	0.014	0.799***	0.938***										
TL_GenderBalance	-0.035	-0.043	0.548***	-0.113	-0.026	0.057	0.135	0.373***	0.522***	0.463***									
TL_Gstereo	0.023	0.038	-0.100	-0.048	0.184	-0.258*	0.067	-0.283**	-0.182	-0.129	0.000								
TL_Wclimate	0.119	0.129	0.142	-0.097	0.204	-0.274**	0.216*	0.084	0.097	0.049	0.002	0.023							
TL_PInfluDisp	0.097	0.167	0.054	0.066	0.193	0.007	0.205	0.112	0.174	0.141	0.076	-0.131	0.154						
TL_Tclimate	-0.019	0.125	0.019	0.107	0.163	-0.131	-0.055	0.187	0.231*	0.220*	0.102	0.166	0.334**	-0.038					
TL_Leadstyle	0.114	0.206	0.146	0.196	0.184	-0.100	0.088	0.194	0.229*	0.241*	0.183	0.068	0.338**	0.103	0.744***				
TL_TimeTeam	0.189	0.207	0.026	0.100	0.142	0.020	0.147	0.236*	0.159	0.157	0.006	-0.083	-0.070	0.003	0.061	0.059			
TL_TimePub	0.280**	0.333**	-0.014	0.234*	0.088	0.023	0.077	-0.022	-0.029	-0.023	-0.006	-0.059	0.134	0.169	0.144	0.201	0.301**		
TL_PercCareResp	-0.001	0.031	0.233*	0.208	-0.432***	0.565***	-0.214*	0.159	0.174	0.172	0.155	-0.237*	-0.125	0.014	0.002	0.007	-0.129	-0.103	
TL_PercTempContract	-0.061	0.063	0.026	-0.147	0.448***	-0.565***	-0.011	-0.062	-0.071	-0.078	-0.039	0.192	0.285**	0.152	0.142	0.098	0.005	0.095	-0.292**

Computed correlation used spearman-method with pairwise-deletion.

Modelling

The analysis uses a generalized linear model (GLM) process (McCullagh & Nelder, 1989) with a negative binomial link. The negative binomial link is needed since performance indicators are akin to count data, for which a Poisson link was initially considered. However, initial plotting of the data and summary statistics shows that the variance of the data was clearly larger than the mean of the data, signalling over-dispersion. In this case, the use of a negative binomial link is more appropriate. This corresponds to the modelling techniques used in much of bibliometric research. The analysis was performed using R, and more specifically the glm.nb command of the MASS package (Venables & Ripley, 2002). The results present Incident Rate Ratios (IRR), computed as the exponential of coefficients in the model. Multi-collinearity can represent a significant source of error in modelling. For this reason, Variance Inflation Factors (VIFs) were computed for all models. In all the models presented below, all VIFs are well below the threshold of 10 (Belsley, Kuh, & Welsch, 1980).

Results

The following section summarises the main results of the different models and explores the link of gender diversity and team performance. Both FAP and PM measures are counts, but at the team level are not necessarily integers. Rather than rounding which would lead to lower precision in the coefficients, the analysis rescales both measures by multiplying by 1,000 (denoted as FAP1000 and PM1000 where applicable). Annex II provides result tables in non-exponantied format as well as additional information on confidence intervals.

Gender diversity and research performance

Model 1 suggests that the number of women contributing to publication is not related to production nor impact. This is not aligned to the findings of many studies in the literature which find a productivity gap in terms of publications when it comes to publications (Aiston & Jung, 2015; Busolt & Kugele, 2009; Müller et al., 2016). The percentage of bibliometrically defined seniors as well as the team size are the two primary variables that show a positive and significant effect for productivity (FAP) as well as for impact (PM) of the research group.

	FAP 1000		**PM 1000**	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1405.43	**<0.001**	17483.85	**<0.001**
Percent Women	0.99	0.103	1.00	0.725
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**

Percent No Bib. Contrib.	1.00	0.696	0.99	0.218
Team size	1.08	**<0.001**	1.06	**<0.001**
Years of research experience	1.14	0.433	0.71	0.118
Observations		88		88
AIC		1825.362		2073.095

Model 1: Influence of women representation within a team on research performance (H1a)

Model 2 examines the effects of adding information about gender balance on research performance. Gender balance is highest where there is parity, but decreases when either women or men are under-represented. Results suggest that gender balance within teams has no statistically significant effect on performance (FAP or PM), all other actors kept constant.

	FAP 1000		**PM 1000**	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1391.68	**<0.001**	18400.86	**<0.001**
Percent Women	0.99	0.149	1.00	0.649
Gender Balance	1.00	0.941	1.00	0.750
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.690	0.99	0.205
Team size	1.08	**<0.001**	1.06	**<0.001**
Years of research experience	1.14	0.436	0.72	0.121
Observations		88		88
AIC		1827.357		2075.010

Model 2: Influence of gender balance on research performance (H1b)

The aim of this analysis is to examine the potential outcomes of gendered processes within research teams, as measured by the Gender Diversity Index. The Gender Diversity Index measures the extent to which both women and men can equally realise themselves within research teams along seven aspects of diversity. Model 3 examines the potential outcomes of gendered processes as measured with the Gender Diversity Index, on research performance. The results are not statistically significant for neither FAP nor PM.

	FAP 1000		PM 1000	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1239.09	**<0.001**	18152.08	**<0.001**
Gender Diversity Index	0.88	0.696	0.90	0.814
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.946	0.99	0.266
Team size	1.08	**<0.001**	1.06	**<0.001**
Years of research experience	1.13	0.477	0.73	0.141
Observations		88		88
AIC		1827.744		2073.155

Model 3: Influence of Gender Diversity Index on research performance (H1c)

The empirical link between performance and (1) women's representation, (2) gender balance and (3) the outcomes of gendered processes within research teams has provided no support for an effect of the gender composition of teams or how gender inclusive they are on research performance. To provide a fuller account of the relationship between the Gender Diversity Index and performance, these relationships can be examined in relation to – and not separately from – both gender balance and women's representation in research teams. Model 4 provides no evidence that the gender composition of teams affects the relationship between gender diversity and research performance.

	FAP 1000		**PM 1000**	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1417.65	**<0.001**	17574.63	**<0.001**
Gender Diversity Index	1.10	0.829	0.87	0.801
Percent Women	0.99	0.147	1.00	0.629
Gender Balance	1.00	0.956	1.00	0.895
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.705	0.99	0.214
Team size	1.08	**<0.001**	1.06	**<0.001**
Years of research experience	1.14	0.450	0.72	0.138
Observations		88		88
AIC		1829.310		2076.948

Model 4: Impact of gender diversity on research performance, controlled for gender balance and women's representation (H2)

The analysis above provides a lack of evidence to support a relationship between the Gender Diversity Index, women's representation or gender balance and research performance as defined by bibliometrics. Like all composite indicators, the Gender Diversity Index masks the complexity of the phenomenon in that it condenses several variables into a single number on the basis of a framework derived conceptually and verified using multivariate analysis. To address this issue, the following model decomposes the Gender Diversity Index into the seven pillars that are aggregated to form the measure. Further decomposition into metrics was attempted, but results are not presented due to serious concerns over multi-collinearity as evidenced both by high correlations within pillars (Humbert and Guenther, 2018) and high VIFs values, sometimes well-above the cut-off of 10.

When the Gender Diversity Index is decomposed at the level of pillars, the model provides

evidence that the education score as well as the age score tend to be significant. A higher score in the 'education pillar' (a more balanced gender representation among PhD holders and low attrition from non-PhD to PhD holders) is positively associated with performance. Additionally, the 'age pillar' (gender representation in the group above average age and low attrition between the group below average and the group above) also appears to be negatively associated to impact. These results need to be looked at carefully, at scores at the pillar level are more sensitive to variations in small teams than the overall score of the Gender Diversity Index. Further modelling, if possible with larger groups, would provide more reliable estimates.

		FAP 1000		**PM 1000**	
	Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
GDI pillars	(Intercept)	2428.81	**<0.001**	53313.87	**<0.001**
	Seniority score	1.36	0.241	1.58	0.162
	Tenure score	0.69	0.099	0.65	0.137
	Care Current score	1.29	0.299	1.47	0.205
	Contract score	0.89	0.649	0.93	0.823
	Education score	1.81	**0.023**	1.91	**0.049**
	Marital score	0.79	0.433	0.58	0.150
	Age Av score	0.80	0.432	0.49	**0.041**
	Percent Women	0.99	**0.044**	1.00	0.958
	Gender Balance	1.00	0.935	1.00	0.802
	Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
	Percent No Bib. Contrib.	1.00	0.808	0.99	0.115
	Team size	1.07	**<0.001**	1.06	**<0.001**
	Years of research experience	1.02	0.895	0.55	**0.009**
	Observations		88		88
	AIC		1831.903		2076.419

Model 4.1: Gender Diversity Index - Individual pillar scores

Model 5 examines the effect of team climate and working climate in relation to the Gender Diversity Index. The models shows a positive effect of team climate for impact. It is interesting to note that when controlling for team and working climate, the effects of gender balance becomes statistically significant. This illustrates the importance of climate for gender balanced teams when it comes to production and warrants further analyses.

	FAP 1000		**PM 1000**	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	368.71	**0.001**	1316.20	**0.001**
Gender Diversity Index	0.64	0.257	0.89	0.825
Percent Women Bib	0.99	0.146	1.00	0.914
Gender Balance Bib	1.01	**0.049**	1.00	0.481
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.557	0.98	0.096
Team size	1.08	**<0.001**	1.07	**<0.001**
Years of research experience	1.21	0.320	0.68	0.103
Working climate	1.63	0.097	1.08	0.837
Power disparity	0.83	0.857	3.50	0.319
Team climate	1.00	0.994	3.93	**0.037**
Leadership style	0.74	0.410	0.44	0.069
Gender stereotypes	1.04	0.894	0.94	0.855
Observations	88		88	
AIC	1834.289		2079.421	

Model 5: Influence of gender diversity on research performance, controlled by team culture and team climate (H3)

Model 6 shows no statistically significant effects for variables capturing the working conditions of the team members on performance. furthermore, adding these control variables showed no effects on the relationship between the gender composition of the team and research performance.

	FAP 1000		PM 1000	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	482.86	**<0.001**	5548.74	**<0.001**
Gender Diversity Index	0.75	0.470	0.79	0.640
Percent Women Bib	1.00	0.158	1.00	0.622
Gender Balance Bib	1.01	0.056	1.00	0.312
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.757	0.99	0.244
Team size	1.08	**<0.001**	1.07	**<0.001**
Years of research experience	1.37	0.150	0.80	0.426
Time dedicated to team	1.03	0.861	0.94	0.761
Time dedicated to publications/patents	1.15	0.254	1.27	0.116
Percent with Care Responsib.	0.99	0.322	1.00	0.988
Percent Temporary Contract	1.00	0.295	1.01	0.270
Observations	88		88	
AIC	1832.201		2080.009	

Model 6: Influence of gender diversity on research performance, controlled by working conditions (H4)

Conclusion

Overall, the analysis suggests that when the analysis is conducted at the team level, there is no evidence of a relationship between gender-related variables – women's representation, gender balance, gender stereotypes or gender inclusivity as measured by the Gender Diversity Index – and research performance. However, there are a number of serious limitations to this analysis. First, the usual caveats as to the causal nature of the relationships explored here apply. It is not possible to establish a causal relationship between gender diversity within research teams, beyond that of a simple association. Second, it should be noted that the data combines two very different sources: data

originating from a cross-country survey and data obtained from bibliometric datamining. This might be problematic for two reasons. First, it introduces a time gap, with survey-based variable capturing a situation at time t, but attempting to relate it to bibliometric data that precedes this point in time. This asynchronicity needs to be further explored through more data analysis, and where possible through further bibliometric datamining to capture performance at time t. Third, the models have been specified to examine the relationship between the Gender Diversity Index and research performance, while considering how controlling for other demographic or structural factors might affect that relationship. Further work is needed to better understand the different effects that taking either survey- or bibliometric-based indicators can have on the results. This is particularly important given that results can differ significantly depending on whether the representation of women and men is taken from survey responses or bibliometric information. For example, bibliometric information can show that a given team is made up of 10 women and 10 men, of which 8 women and 2 men responded to the survey. From this is, it is easy to see that the bibliometric-based estimate (50%) is more accurate than the survey-based one (80%). It could also be that respondents have a different gender identity than it is perceived by others. However, a question of interest – as of yet not answered – is whether the role of team composition should serve to 'qualify' the dependent variable (performance measures) or serve to 'qualify' the Gender Diversity Index, itself based on survey-data. Further research is required to shed light on this issue.

ANNEX I – Chapter 3

Model 4 - B

	FAP 1000		**PM 1000**	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1605.23	**<0.001**	21643.61	**<0.001**
Gender Diversity Index	1.22	0.659	1.12	0.844
Perc Resp Women	0.99	0.161	1.00	0.898
Resp Gender Balance	1.00	0.742	1.00	0.643
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.794	0.99	0.271
Team size	1.08	**<0.001**	1.06	**<0.001**
Years of research experience	1.11	0.551	0.71	0.119
Observations	88		88	
AIC	1828.828		2076.790	

Model 4 – C

	FAP 1000		PM 1000	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1127.68	**<0.001**	15799.31	**<0.001**
Gender Diversity Index	0.71	0.389	0.77	0.606
Percent Women (bib)	1.00	0.176	1.00	0.607
Gender Balance (bib)	1.00	0.124	1.00	0.647
Percent Seniors (bib)	1.04	**<0.001**	1.05	**<0.001**
Percent No Bib. Contrib.	1.00	0.592	0.99	0.257
Team size	1.08	**<0.001**	1.07	**<0.001**
Years of research experience	1.17	0.365	0.73	0.159
Observations		88		88
AIC		1828.519		2076.608

Model 4 D

	FAP 1000		PM 1000	
Predictors	*Incidence Rate Ratios*	*p*	*Incidence Rate Ratios*	*p*
(Intercept)	1450.95	**<0.001**	18207.08	**<0.001**
Gender Diversity Index	0.76	0.452	0.76	0.541
Percent Women Senior (bib)	1.00	0.613	1.00	0.421
Gender Balance Senior (bib)	1.00	0.172	1.00	0.365
Percent Seniors (bib)	1.03	**<0.001**	1.04	**<0.001**
Percent No Bib. Contrib.	1.00	0.734	0.99	0.241
Team size	1.07	**<0.001**	1.06	**0.001**
Years of research experience	1.14	0.437	0.76	0.199
Observations		87		87
AIC		1812.047		2055.008

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Annex I – Team Contact Questionnaire

GEDII Questionnaire Team CONTACT

Study title: Gender-Diversity-Impact. Improving Research and Innovation through Gender Diversity (GEDII) https://www.gedii.eu/

Funding Organisation: European Commission, H2020, Grant Agreement Nr 665851.

Thank you very much for participating in our survey. Its purpose is to understand basic team level characteristics of research and engineering groups working in the public and the private sector. Filling out this questionnaire will take about 5 minutes and will give us some information on your team.

In our email, you will find the link to the team member questionnaire and a team ID code. Please distribute the link and team ID code to all of your team members.

1 Please enter your team ID code. [Filled in automatically by system]

_____

2 To which sector is your team rather tied to?

[ ] Medical engineering
[ ] Transport

3 In which type of organisation do you work?

[ ] University
[ ] Public research centre
[ ] Private sector/ industry
[ ] Other, please specify: _____

4 How many employees does your organisation have?

[ ] Less than 50
[ ] 50 - <250
[ ] 250 - <1000
[ ] 1000 or more

5 How many women and men are working in your team?

We define a team as a group of persons working towards a shared goal (e.g. a technical product, a research project). Each team member needs to have a formal organisational role/relationship and/or official contract with your organisation (e.g. an employee, a PhD

student, etc).

_____ women _____ men

6 Please enter the names of you team members.

_____

_____

7 Can you describe in 1-2 sentences what this team is working on?

_____

_____

8 In which year was the current team leader officially appointed as team leader by your organisation?

_____

9 Does the team employ a particular formal working methodology as part of your research or problem solving (such as Agile methods, TRIZ, Design Thinking, …)?

[ ] Yes, please specify: _____
[ ] No
[ ] I don't know

10 Do team members have the opportunity to interact face to face?

[ ] Most team members share the same physical location (lab, office, building) in walking distance to each other
[ ] Some team members are within walking distance, others are located further away
[ ] Most team members are working in different locations; face-to-face meetings require travel arrangements

11 Does your organisation have a Gender Equality Plan?

The gender equality measure might be part of a wider diversity framework including individual initiatives, organizational settings and others.

[ ] Yes
[ ] No
[ ] I don't know

12 Does your research integrate a "gender dimension"?

Examples of a gender dimension in research include conducting medical drug trials on both women and men to assess their effects on different types of subjects. An example for transport engineering is assessing the effects of an impact on pregnant crash test dummies.

[ ] Yes, please specify: _____

[ ] No [ ] I don't know

13 Is your team involved in any Responsible Research & Innovation(RII) activities? If so, which?

Examples of RRI include the adaption of open access publication schemes, science education activities or public engagement among others.

[ ] Ethics

[ ] Gender Equality

[ ] Governance

[ ] Open Access

[ ] Public Engagement

[ ] Science Education

[ ] I don't know

Annex II – Team Member Questionnaire

GEDII Questionnaire Team MEMBERS

Study title: Gender-Diversity-Impact. Improving Research and Innovation through Gender Diversity (GEDII) https://www.gedii.eu/

Funding Organisation: European Commission, H2020, Grant Agreement Nr 665851.

The questionnaire forms part of a country level survey carried out simultaneously in Germany, Lithuania, Spain, Sweden and the UK. Its purpose is to understand basic team level characteristics of research and engineering groups working in the public and the private sector. We kindly invite you to fill out this questionnaire which will take about **10-15 minutes.**

Your data will not be stored in any way containing direct references to your organisation, team or person. Upon completion of the survey, the resulting dataset will be downloaded and then deleted from the Unipark servers. Unipark is the academic branch of Questback dedicated to research surveys; servers are located in Germany complying with German data protection legislation and international certification (ISO 27001, ISO 20000).

You can exercise your rights of accessing, modifying, opposing, and cancelling your data by contacting us through our webpage (www.gedii.eu).

These rights are protected by the Spanish Organic Law 15/1999 on Personal Data Protection and EU legislation.

Section A Getting started

1 Please enter your team ID code.

_____

2 Which is your highest level of education?

[ ] Secondary education
[ ] Bachelor
[ ] Master or equivalent postgraduate qualification
[ ] Doctorate or higher
[ ] Other, please specify: _____

3 In which discipline did you obtain your highest qualification?

[ ] Chemistry, Physics & Engineering
[ ] Life Science & Medical Science
[ ] Sociology, Economics & Political Science
[ ] Computer Science & Mathematics
[ ] Psychology & Education
[ ] Agriculture & Food Science
[ ] Biology, Environmental Science & Geography
[ ] Humanities
[ ] Other, please specify: _____

4 I was born in (year)

_____

5 I am:

[ ] A woman [ ] A man [ ] Other

5a ***(Filter If checked "Other"):*** One aim of this study is to construct a gender diversity index which operates with a binary gender variable, despite other identities in-between. If you prefer not to identify with either woman or man, some sections of this questionnaire can't be used. However, we encourage you to respond to all items in any case, contributing to the overall picture of your team.

[ ] I would tend to identify as a woman
[ ] I would tend to identify as a man

[ ] Neither

Section B – You and your team

[Anonymous] If you are unsure regarding the team this questionnaire refers to, please get in touch with the person from your organization who forwarded you our email (containing the URL to this survey).

[Personalized] If you are unclear to which team you belong for this questionnaire, please consult with our team contact person, #u_t_team_contact#.

6 How much of your work time do you dedicate to your team?

[ ] < 20%
[ ] 20 - 39%
[ ] 40 - 59%
[ ] 60 - 79%
[ ] 80 - 100%

7 In which year did you join your team?

_____

8 Which of the following best describes your primary, current role in the team?

[ ] MA Student
[ ] PhD Student
[ ] Research or lab assistant / technician
[ ] Postdoc / Junior researcher
[ ] Senior researcher
[ ] Team leader
[ ] Other, please specify: _____

9 How often and by which means do you normally communicate with your team colleagues?

	Never	Once per month or less	Once per week or less	A few times per week	Once per day or more
Formal project team meetings with the majority of team members					
Memos or written reports of any kind					
Making an appointment with one or several team member(s)					
Telephone, skype calls, chats, email					

Informal or unplanned discussion (e.g. just stopping by, in the hall, over coffee)					

10 To which extent do you think that you can influence your team members?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I have preferential position in my team and I can easily influence the other team members					
I have the resources and power to influence the actions of the other team members					
I have more power within my team compared to the other team members.					

11 How would you characterise the working climate within your team?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I am clear about what my team's objectives are					
I am in agreement with the team's objectives					
The team's objectives are clearly understood by other members of the team					
The team's objectives can actually be achieved					
The team's objectives are worthwhile to the organisation					
We keep each other informed about work-related issues in the team					
There are real attempts to share information throughout the team					
We have a 'we are in it together' attitude					
We are prepared to question the basis of what the team is doing					
We critically appraise potential weaknesses in what we are doing in order to achieve the best possible outcome					
We build on each other's ideas in order to achieve the best possible outcome					
We are always searching for fresh, new ways of looking at problems					

We take the time needed to develop new ideas					
We co-operate in order to help each other and apply new ideas					

12 *Filter (from question 15): If you are not the team leader:* Please assess your team leaders' leadership style.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
She/he develops ways of motivating us					
I feel proud to work with her/him					
I have trust in her/his ability to overcome any obstacle					
She/he is concerned with training those who need it					
She/he gives advice to those who need it					
She/he gets us to rely on reasoning and evidence to solve problems					
She/he promotes the use of intelligence to overcome obstacles					
She/he presents things through an approach that stimulates me					
She/he has realistic expectations on the outcome of my work					
She/he has realistic expectations on the time schedule I need for my work					
She/he actively fosters trust, involvement and cooperation among team members					

13 How would you characterise the working climate at your wider working environment?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Senior employees respect junior male and female employees equally					

In meetings, people pay just as much attention when women speak as when men speak					
Allegations of gender based and sexual harassment are taken seriously by management					
In this organisation, I would feel comfortable to raise issues about the treatment of women or men					

14 Is there any senior member within your team whom you currently regard as a mentor —someone who gives advice and counsel on career issues and/or sponsors or advocates for you?

[ ] Yes
[ ] No

14a *(Filter from question 14)* My mentor is

[ ] A man [ ] A women

14b *Filter (from question 14).* Please indicate the level of mentoring you currently receive by your mentor (check all that apply).

[ ] Serves as a role model
[ ] Gives advice on my research directions
[ ] Introduces me to his/her professional networks
[ ] Advises about preparation for advancement (e.g. promotion, leadership position)
[ ] Informs me about laboratory / institute / organisational politics
[ ] Helps to obtain resources (funding, grants, etc.) that I need
[ ] Acts as an advocate for me
[ ] Provides advice on work-life balance
[ ] Other, please specify

Section C – Professional situation and career

15 What type of contract do you have?

[ ] Temporary / casual
[ ] Permanent / tenured

16 How many hours a week are you contracted for?

[ ] Less than 20 hours/ week
[ ] 20 up to 35 hours/week

[ ] More than 35 hours

17 How many hours do you actually work per week in this job?

[ ] As many hours as I am contracted for
[ ] 1-5 hours more than I am contracted for
[ ] 6-10 hours more than I am contracted for
[ ] 11 hours or more than I am contracted for

18 How many years of experience do you have in your research area (including PhD years if applicable)?

[ ] 2 years or less
[ ] 3-5 years
[ ] 6-9 years
[ ] 10-19 years
[ ] 20-29 years
[ ] 30 years or more

19 How much external funding have <u>you raised</u> as lead researcher since 1st January 2013 for your institution or your person?

For projects involving several organizations, you need to be the lead researcher for your institution but not necessarily of the overall project.

[ ] none
[ ] less than 9999 EUR/ GBP / SEK
[ ] 10 000 – 24 999 EUR / GBP / SEK
[ ] 25 000 - 49 999 Euro / GBP / SEK
[ ] 50 000 to -99 999 Euro / GBP / SEK
[ ] 100 000 – 499 999 Euro / GBP / SEK
[ ] more than 500 000 Euro / GBP / SEK

20 How much of your weekly working time can you spend on average on activities that are geared towards publications and patents?

[ ] Publications/ patents are typically not part of my work
[ ] < 20%
[ ] 20 - 39%
[ ] 40 - 59%
[ ] 60 - 79%
[ ] 80 - 100%

21 Are you an editor to scientific journals that have an impact factor? If yes, to how many?

[ ] Yes, I am an editor to ___ scientific journal(s)

[ ] No

22 Are you a member of a management board of a professional or scientific association in your field? If yes, of how many?

[ ] Yes, I am member to ___ boards

[ ] No

23 Did you engage in any of the following dissemination and knowledge transfer activities during the past year? Check all that apply.

[ ] Workshops and dissemination events for academic audiences

[ ] Workshops and dissemination events for non-academic audiences (e.g. schools, teachers)

[ ] Popular press (Radio, TV, Newspapers or Magazines)

[ ] Social media including blogs for my professional work (on a regular basis)

[ ] Science cafés, science festivals, reseachers' nights

[ ] Other, please specify

[ ] None of the above

24 Have you "published" under open access schemes?

[ ] Yes, software under Open Source licenses

[ ] Yes, data under open access

[ ] Yes, scientific articles under open access

[ ] Other, please specify

[ ] None of the above

25 Do you involve citizens in the discussion of the implications of your research?

[ ] On a regular basis

[ ] Occasionally

[ ] Never

Section D Personal information

26 Do you consider yourself to be a member of a minority ethnic group?

[ ] Yes [ ] No

27 Do you consider yourself to have a disability or chronic illness?

[ ] Yes [ ] No

28 Do you live with a partner (marriage, cohabitation, civil partnership, etc)?

[ ] Yes [ ] No

29 Please share with us your opinion on the following statements.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Women and men have their respective strengths in different areas					
Women and men generally have different ways of contributing to a team task					
Women and men generally have different communication styles					
Many of the widespread ideas about how women and men differ are accurate					

30 Do you have/ have had care responsibilities for children under 16 years of age or for dependent adults? Select all that apply.

[ ] Yes, I currently have care responsibilities for children under 16 years

[ ] Yes, I had care responsibilities in the past for children under 16 years but not anymore

[ ] Yes, I currently care for dependent adults

[ ] Yes, I had care responsibilities in the past for dependent adults but not anymore

[ ] No I have never had any care responsibilities

30a *Filter (from question 30): If you have/ have had care responsibilities:* To which extent do/did these care responsibilities affect your work?

[ ] Not at all

[ ] To some extent

[ ] To a large extent

30b ***Filter (from question 30a): If your care responsibilities affect/ affected your work :***
In which way do/did your care responsibilities affect your work? Select all that apply.

[ ] More than 6 months of interruption of my professional career (excluding maternity/paternity/parental leave)
[ ] Less than 6 months of interruption of my professional career (excluding maternity/paternity/parental leave)
[ ] I reduced my working hours slightly
[ ] I reduced my working hours significantly
[ ] My work schedules got much more fragmented
[ ] Participation in travel related businesses (such as congresses) dropped
[ ] The amount of my scientific papers/ patents dropped
[ ] I quit my job
[ ] Other, please specify ____
[ ] None of the above

31 How many peer reviewed articles have you published since 1st January 2013?

[ ] 0
[ ] 1-4
[ ] 5-9
[ ] 10 - 19
[ ] 20 – 39
[ ] 40 or more

32 On how many European patents have you been named as an inventor since 1st January 2013 (including pending accepted applications)?

[ ] 0
[ ] 1-4
[ ] 5-9
[ ] 10 - 19
[ ] 20 – 39
[ ] 40 or more

Annex III – Overview of Recruitment Efforts 1st Wave

Table 8: Recruitment efforts Germany

Germany				
Public Sector / Academia				
Action		**Time frame 2017**	**Invitations to survey**	**Response success (participation)**
Author lists for Transport and (Bio-) Medical Engineering	Address and team verification	January - June	70 (Transportation[10])	4
Mass e-mail to all identified authors in WoS file	Preparation and send out	June	1347 (BioMed) 480 (Transportation)	4
Further look up of relevant departments in Universities	Online team and address research and send out	May	50	No participation
Personal alumni contacts	Address research and send out	April to July	5	1
Private sector / Companies				
Action		**Time frame**	**Invitation to survey**	**Response success (participation)**
List of companies with patent applications - contact via partner VDE	Providing list by HFU, send out by VDE	January	22	No participation
Via contact e-mail lists VDE	Preparation of contact mail and send out	March to June	30	No participation
Looking up of responsible persons for gender diversity, contacts via VDE	Address verification and send out	July to September	15	No participation
Personal alumni contacts	Address research and send out	April to July	6	4

10Medical Engineering directly via mass-email due to experience with very poor response success in field of Transportation in combination with too large amount of address data in Germany.

Table 9: Recruitment efforts Spain

Spain				
Public Sector / Academia				
Action		**Time frame 2017**	**Invitations to survey**	**Response success (participation)**
Verified team leader lists for Transport and (Bio-) Medical Engineering	Address and team verification	January-March	283 (Biomed) 258 (Transport)	40
Mass e-mail to all identified authors from WoS	Preparation and send out	-	-	
Further look up of relevant departments in Universities	Online team and address research and send out	January-March	(see above)	(see above)
Personal recruitment /networks	HR and gender equality officers of research centers and universities	April – August	50	24
Private sector / Companies				
Action		**Time frame**	**Invitation to survey**	**Response success (participation)**
List of companies with patent applications	Providing list by HFU	January	50 (Biomed) 28 (Transport)	10
Looking up of responsible persons for gender diversity **Personal contacts**	Address verification and send out Telephone follow up	- May – August	(see above)	(see above)
Other				

In Spain, the participation of one entire research institute with 17 groups was achieved. The survey was distributed to research groups through a collaborative agreement with the Human Resource department and Diversity Manager within the framework of a more extensive questionnaire. The original GEDII questionnaire was extended with several additional questions while preserving all original items used in the cross-country survey.

Table 10: Recruitment efforts UK

UK				
Public Sector / Academia				
Action		**Time frame 2017**	**Invitations to survey**	**Response success (participation)**
Verified team leader lists for Transport and (Bio-) Medical Engineering	Address and team verification	January – June	75 Teams (27 TP, 38 BM)	1 Team
Mass e-mail to all identified authors in the lists	Preparation and send out	May/June	4 771 authors (1073 TP, 3368 BM)	3 Teams
Equality officers and ATHENA SWAN contacts at Universities	Online team and address research and send out	May - August	14 universities	1 Team
Other	Recruitment at conferences, events and personal contacts	May - August	-	3 Teams
Private sector / Companies				
Action		**Time frame**	**Invitation to survey**	**Response success (participation)**
List of companies with patent applications	Contacts from WISE network	April - August	5 companies (4 TP, 1 BM)	none
	Address and team verification	February – August	59 companies (44 TP, 15 BM)	none

Table 11: Recruitment efforts Lithuania

Lithuania				
Public Sector / Academia				
Action		**Time frame 2017**	**Invitations to survey**	**Response success (participation)**
Author lists for Transport and (Bio-) Medical Engineering	Address and team verification	January - June	27 teams (11 TP, 16 BM)	6
Mass e-mail to all identified authors in the lists	Preparation and send out	June/July	635 authors	1
Private sector / Companies				
Action		**Time frame**	**Invitation to survey**	**Response success (participation)**
List of companies with patent	Providing list by HFU	no Lithuanian company in the list	-	-
Companies without patent	Research key companies and contact them	February - August	12 companies	1

Table 12: Recruitment efforts Sweden

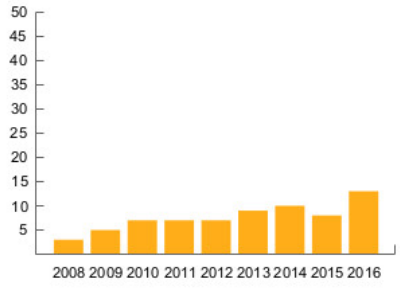
Sweden				
Public Sector / Academia				
Action		**Time frame 2017**	**Invitations to survey**	**Response success (participation)**
Author lists for Transport and (Bio-) Medical Engineering	Address and team verification	May to October	98	0
Mass e-mail to all identified authors in the lists	Preparation and send out	May to October	1500	30
Further look up of relevant departments in Universities	Online team and address research and send out	n.a	n.a	n.a
Personal alumni contacts	Address research and send out	n.a	n.a	n.a
Private sector / Companies				
Action		**Time frame 2017**	**Invitation to survey**	**Response success (participation)**
List of companies with patent applications	Providing list by HFU	May to October	20	1
Looking up of responsible persons for gender diversity	Address verification and send out	May to October	n.a.	0
Personal alumni contacts	Address research and send out	n.a	n.a	n.a
Other				

Annex IV – Example Bibliometric Performance Profile

Grp 999 Gedii Test

GRP 999_RESULTS - BIBLIOMETRIC INDICATORS

NUMBER OF PAPERS (P)	**69**
Number of papers (articles, letters and reviews) published by UoA "Grp 999_results" during 2008-2016.	
NUMBER OF FRACTIONALIZED PAPERS (Frac P)	**11.0**
Sum of author fractionalized papers.	
CITATIONS PER PAPER (CPP)	**8.9**
Number of citations per paper.	
JOURNAL NORMALIZED CITATION SCORE (NCSj)	**0.99**
CPP normalized in relation to the UoA "Grp 999_results" journal set (average=1.00).	
NORMALIZED JOURNAL CITATION SCORE (NJCS)	**1.26**
The impact of the journal set normalized in relation to its sub-fields (average=1.00).	
FIELD NORMALIZED CITATION SCORE (NCSf)	**1.31**
CPP normalized in relation to the UoA "Grp 999_results" sub-field set (average=1.00).	
SUM OF FIELD NORMALIZED CITATION SCORE (Sum NCSf)	**14.4**
NCSf times Frac P.	
TOP 5 % (TOP5%)	**8.52**
Percentage of papers above the 95th citation percentile.	



Number of papers per year

Field normalized citation score per year
(2 year citation window)

Grp 999 Gedii Test

GRP 999_RESULTS - BIBLIOMETRIC INDICATORS

HIRSCH INDEX (h-index) **14**

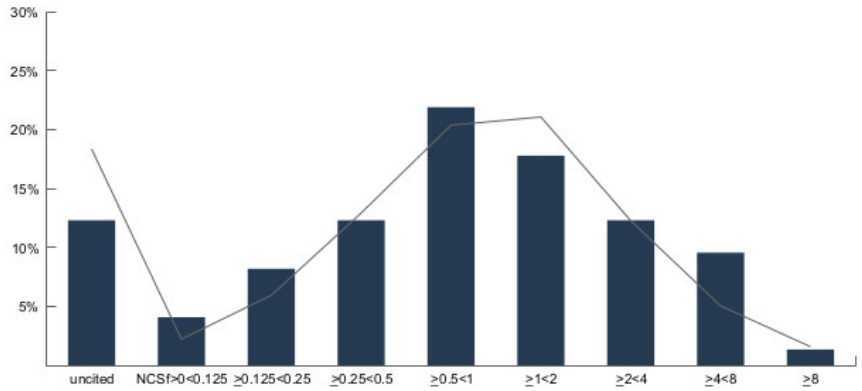
The h number papers that have at least h citations each.

AUTHOR MEAN (AUm) **8.1**

Mean number of authors per paper.

INTERNATIONAL COLLABORATION MEAN (IntCOLLm) **1.5**

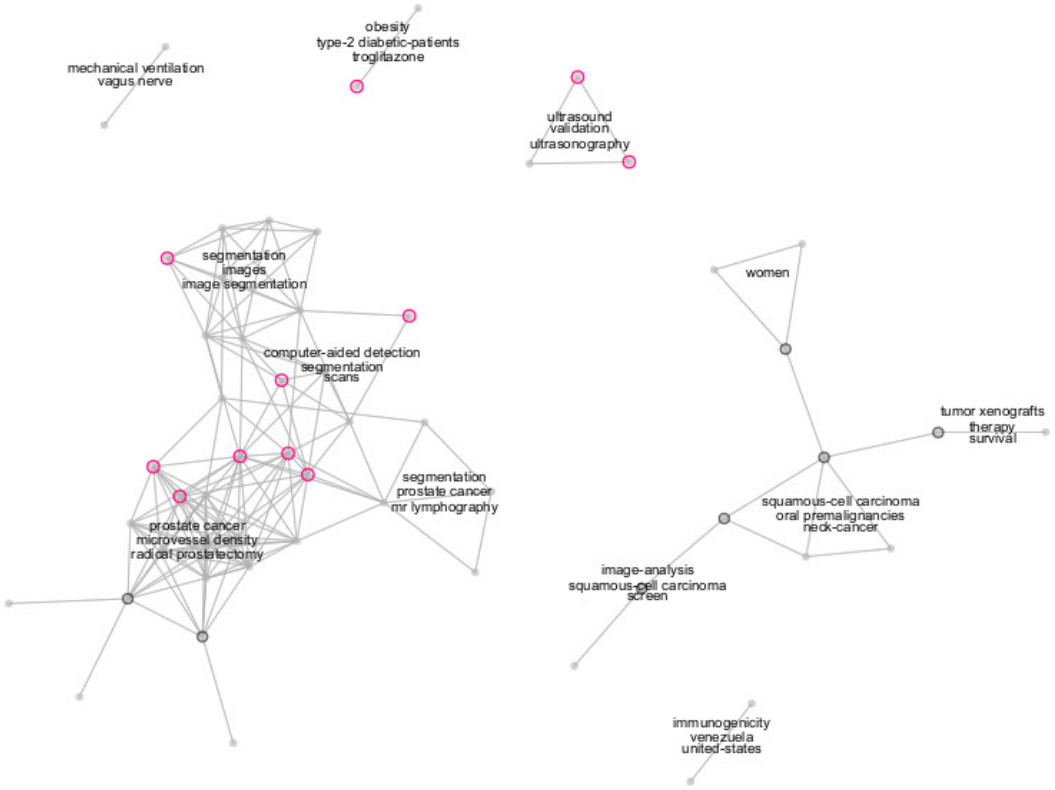
Mean number of countries per paper.



Citation profile: The distribution of field normalized citation score for Grp 999_results (bars) compared with all papers from all groups (7477) (line).

Grp 999 Gedii Test

GRP 999_RESULTS - PUBLICATION PROFILE



The map shows papers (nodes) published by Grp 999_results.
Relations (edges) are based on bibliographic coupling.
Most frequent keywords are displayed for groups of related papers.
Papers with high field normalized citation score (>3) are marked with a pink border.

MOST FREQUENT JOURNALS

IEEE T MED IMAGING (6)
RADIOLOGY (5)
PROSTATE (3)
MED PHYS (3)
MED IMAGE ANAL (3)
HISTOPATHOLOGY (3)
IEEE T BIO-MED ENG (2)
EUR RADIOL (2)
AM J CLIN PATHOL (2)
WOUND REPAIR REGEN (1)
VACCINE (1)
ULTRASOUND MED BIOL (1)

MOST FREQUENT COLLABORATORS

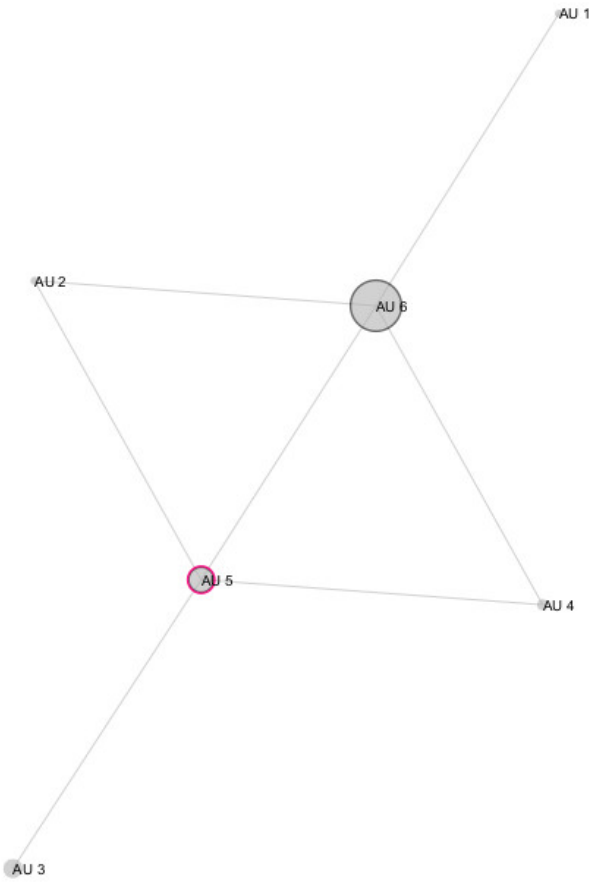
RADBOUD UNIV NIJMEGEN (128)
BARCELONA UNIV (8)
COMP VIS CTR (6)
RADBOUD UNIV NIJMEGEN MED CTR (4)
MED CTR UNIV (4)
HOSP GERMANS TRIAS & PUJOL UNIV (4)
FRAUNHOFER MEVIS (4)
TWENTE UNIV (3)
MAASTRICHT UNIV (3)
HOSP BADALONA GERMANS TRIAS & PUJOL (3)
GRONINGEN UNIV (3)
GIRONA UNIV (3)

MOST FREQUENT SUBFIELDS

RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING (26)
ENGINEERING (15)
COMPUTER SCIENCE (11)
PATHOLOGY (10)
ONCOLOGY (9)
CELL BIOLOGY (8)
IMAGING SCIENCE & PHOTOGRAPHIC TECHNOLOGY (6)
UROLOGY & NEPHROLOGY (4)
ENDOCRINOLOGY & METABOLISM (4)
SCIENCE & TECHNOLOGY - OTHER TOPICS (3)
RESEARCH & EXPERIMENTAL MEDICINE (3)
OBSTETRICS & GYNECOLOGY (3)

Grp 999 Gedii Test

GRP 999_RESULTS - COLLABORATION NETWORK



Annex V – Descriptive Statistics of Survey Results

Sandra Klatt, Wiebke Kronsbein

Three different questionnaires have been created within the survey: a team contact questionnaire, a "personalized" survey for team members and an "anonymous" survey for team members (see methodology for details).

	Team contact		Personalized		Anonymous		Anonymous 2[11]		Total[12]
Total Sample	159		1686		1430		176		3292
Reached Entry Page	128		1241		230		86		1557
Complete (code 31, 32, 33, 34)	128		1123		170		64		1357
Not finished (code 22)	-		118		60		22		200

Table 13: Field statistics retrieved from Unipark

The total sample of recruited teams is 159 groups summing a total of 3292 team members. This pool comprises all team members whose group leader agreed to participate in our survey, facilitating the respective member names. Invitation emails were send to all 3292 individuals out of which 1557 visited at least the entry page of the survey. A total of 1357 team members completed the survey, yielding an overall response rate of 47.3%. Noteworthy is the difference in initial responses between the "personalized" vs "anonymous" survey format: whereas the response rate – in terms of visiting at least the entry page of the survey – for the "personalized" version is roughly 73%, the response rate for the anonymous is rather low at 20%. Most respondents dropped out at the early stage of questionnaire: about a third dropped out on the introduction page, another third on the first two pages ("getting started", "you and your team") of the survey.

The survey was available online from March 2017 until 31st of January 2018.

The following descriptive statistics present tables for the variables of the questionnaires.

11Numbers refer to members of research groups only, excluding administrative staff.

12Excluding Team contact column.

Responses per Country x Gender (v_7R)

Countries of the first wave Germany, UK, Lithuania, Spain and Sweden have responses as follows. Gender has been recodified.

Country	*5. I am (gender)*			***Total***
	A woman	A man	Other	
Germany	40 48.2%	43 51.8%	0 0%	83 100%
UK	41 56.2%	32 43.8%	0 0%	73 100%
Lithuania	8 30.8%	18 69.2%	0 0%	26 100%
Spain	184 35.9%	329 64.1%	0 0%	513 100%
Sweden	138 48.9%	144 51.1%	0 0%	282 100%

Spain had the most responses (513), followed by Sweden (282). To extent the number of responses, the survey was extended in a second wave to further countries:

Country	*5. I am (gender)*			***Total***
	A woman	A man	Other	
Austria	1 100%	0 0%	0 0%	1 100%
Belgium	11 55%	9 45%	0 0%	20 100%
Czech Republic	0 0%	2 100%	0 0%	2 100%
Denmark	17 45.9%	20 54.1%	0 0%	37 100%
Finland	4 66.7%	2 33.3%	0 0%	6 100%
France	5 38.5%	8 61.5%	0 0%	13 100%
Italy	23 34.3%	44 65.7%	0 0%	67 100%
Netherlands	38 42.2%	52 57.8%	0 0%	90 100%
Norway	27 77.1%	8 22.9%	0 0%	35 100%
Poland	6 75%	2 25%	0 0%	8 100%
Portugal	4 18.2%	18 81.8%	0 0%	22 100%
Switzerland	30 38.5%	48 61.5%	0 0%	78 100%

The Netherlands (90), Switzerland (78) and Italy (67) obtained the most responses in the second wave. In contrast, the total numbers per country show that the distribution of the survey was not very successful in the Austria, Czech Republic, Finland and Poland. The following figure illustrates the distribution of responses by country.

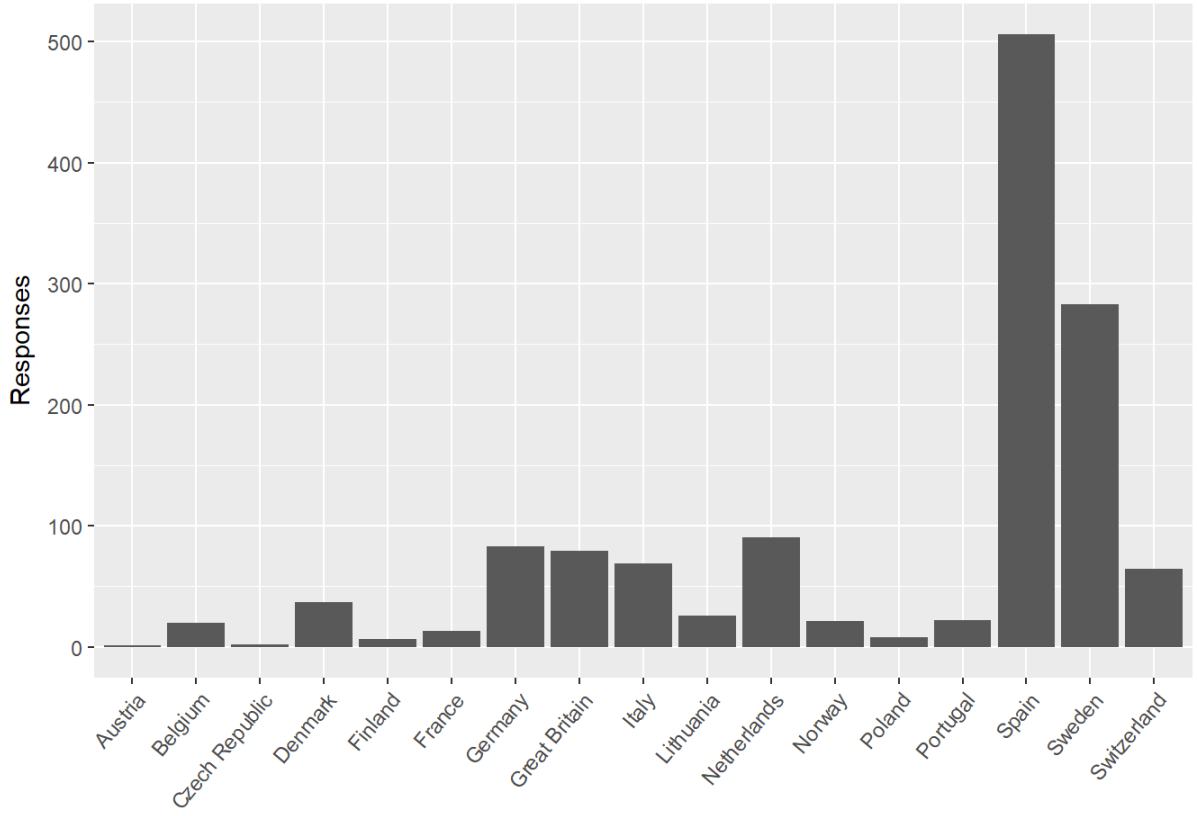


Figure 2: Responses by country GEDII survey

Team Member Questionnaire

Highest level of education (v_4R)

2. Which is your highest level of education?

value	*N*	*raw %*	*valid %*	*cumulative %*
Secondary education	10	0.74	0.74	0.74
Bachelor	79	5.82	5.82	6.56
Master or equivalent postgraduate qualification	541	39.87	39.87	46.43
Doctorate or higher	727	53.57	53.57	100.00
Other, please specify:	0	0.00	0.00	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=3.46 · σ=0.64

Discipline of highest qualification (v_5R)

The survey targeted researchers in the fields of medical engineering and transportation. Consequently, 44% of the respondents gained their highest qualification in the discipline of chemistry, physics and engineering, followed by 26% in life science and medical science.

3. In which discipline did you obtain your highest qualification?

value	*N*	*raw %*	*valid %*	*cumulative %*
Chemistry, Physics & Engineering	596	43.92	44.02	44.02
Life Science & Medical Science	348	25.64	25.70	69.72
Sociology, Economics & Political Science	110	8.11	8.12	77.84
Computer Science & Mathematics	122	8.99	9.01	86.85
Psychology & Education	52	3.83	3.84	90.69
Agriculture & Food Science	7	0.52	0.52	91.21
Biology, Environmental Science & Geography	101	7.44	7.46	98.67
Humanities	18	1.33	1.33	100.00
missing	3	0.22		

total N=1357 · valid N=1354 · $\bar{x}$=2.41 · σ=1.87

Age (v_6)

The mean (average) age of the participants is 38 years, the median is 36 years. The majority of the survey participants is between 25-33 years old, which reflects the age of a typical PhD student.

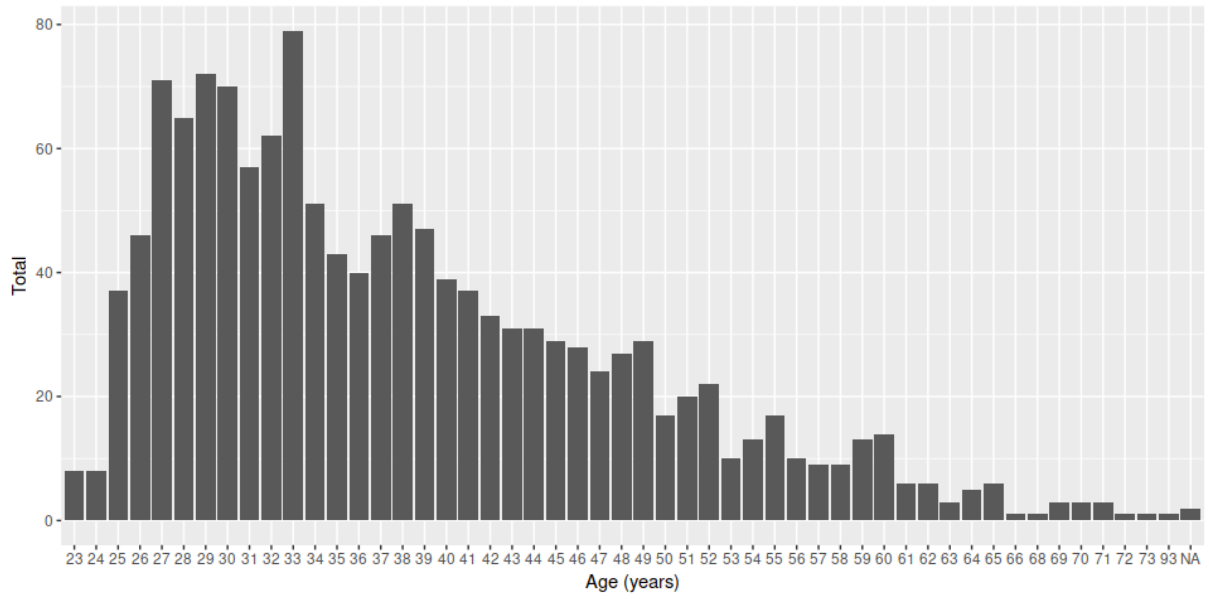


Figure 3: Age distribution team members

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's
##   23.00   30.00   36.00   38.05   44.00   93.00       2
```

Gender (v_7)

Gender distribution of respondents is slightly higher for man (57%) than for women (42%). However, the overall participation of women and men was relatively balanced.

5. I am (gender)

value	*N*	*raw %*	*valid %*	*cumulative %*
A woman	574	42.30	42.30	42.30
A man	778	57.33	57.33	99.63
Other	5	0.37	0.37	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=1.58 · σ=0.50

Gender (v_7R - recodified)

5. I am (gender)

value	*N*	*raw %*	*valid %*	*cumulative %*
A woman	577	42.52	42.55	42.55
A man	779	57.41	57.45	100.00
Other	0	0.00	0.00	100.00
missing	1	0.07		

total N=1357 · valid N=1356 · x̄=1.57 · σ=0.49

Gender and highest education level (v_4R x v_7R)

The shares of women and men are more or less equally distributed between the different education levels.

2. Which is your highest level of education?	*5. I am (gender)*			***Total***
	A woman	A man	Other	
Secondary education	5 0.9%	5 0.6%	0 0%	10 0.7%
Bachelor	43 7.5%	36 4.6%	0 0%	79 5.8%
Master or equivalent postgraduate qualification	226 39.2%	314 40.3%	0 0%	540 39.8%
Doctorate or higher	303 52.5%	424 54.4%	0 0%	727 53.6%
Other, please specify:	0 0%	0 0%	0 0%	0 0%
Total	577 100%	779 100%	0 100%	1356 100%

χ^2=5.122 · df=3 · Cramer's V=0.061 · Fisher's p=0.165

Team tenure (v_11)

Team tenure was calculated based upon the question: "In which year did you join your team?" As can be seen from the distribution shown below, short term membership up to 3-4 years are the most frequent option, which larger membership patterns becoming more and more rare. The mean team tenure is 6.651 years, the median value is 4 years.

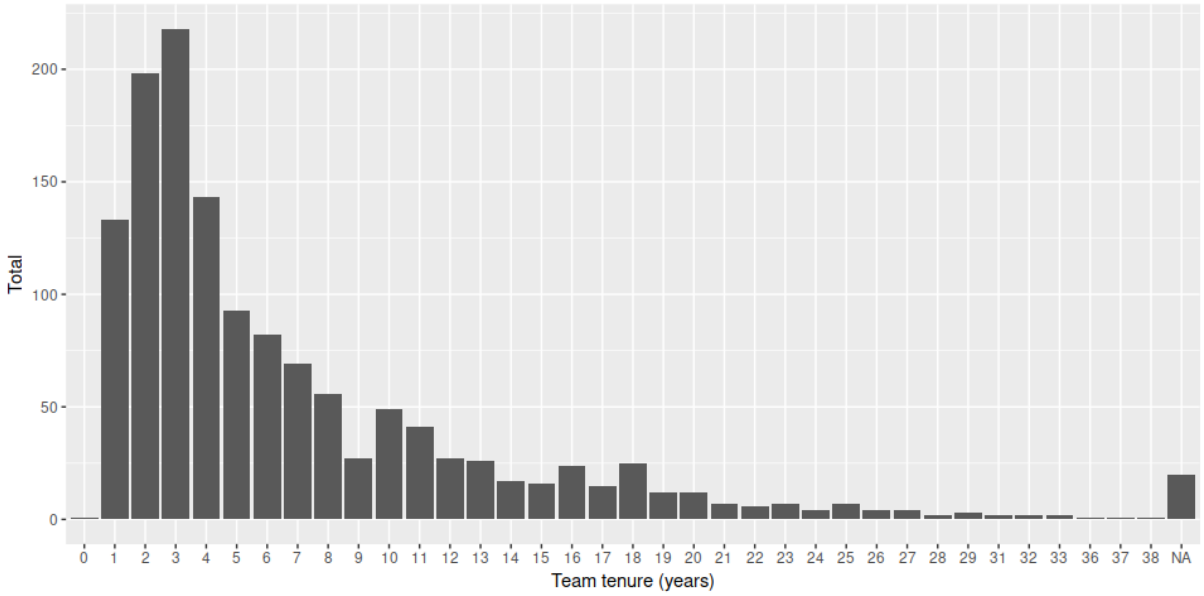


Figure 4: Distribution of team tenure in years

Summary statistics:

```
##    Min. 1st Qu.  Median    Mean   3rd Qu.    Max.    NA's
## 0.000   3.000    4.000     6.651    9.000   38.000   20
```

Dedication to team (v_10)

6. How much of your work time do you dedicate to your team?

value	*N*	*raw %*	*valid %*	*cumulative %*
< 20%	242	17.83	17.99	17.99
20 - 39%	316	23.29	23.49	41.49
40 - 59%	272	20.04	20.22	61.71
60 - 79%	189	13.93	14.05	75.76
80 - 100%	326	24.02	24.24	100.00
missing	12	0.88		

total N=1357 · valid N=1345 · $\bar{x}$=3.03 · σ=1.44

Dedication to team and gender (v_10 x v_7R)

6. How much of your work time do you dedicate to your team?	*5. I am (gender)*			***Total***
	A woman	A man	Other	
< 20%	111 45.9% 19.4% 8.3%	131 54.1% 16.9% 9.7%	0 0% 0% 0%	242 100% 18% 18%
20 - 39%	139 44% 24.3% 10.3%	177 56% 22.9% 13.2%	0 0% 0% 0%	316 100% 23.5% 23.5%
40 - 59%	106 39% 18.6% 7.9%	166 61% 21.5% 12.4%	0 0% 0% 0%	272 100% 20.2% 20.3%
60 - 79%	77 40.7% 13.5% 5.7%	112 59.3% 14.5% 8.3%	0 0% 0% 0%	189 100% 14.1% 14%
80 - 100%	138 42.5% 24.2% 10.3%	187 57.5% 24.2% 13.9%	0 0% 0% 0%	325 100% 24.2% 24.2%
Total	571 42.5% 100% 42.5%	773 57.5% 100% 57.5%	0 0% 100% 0%	1344 100% 100% 100%

χ^2=3.035 · df=4 · Cramer's V=0.048 · p=0.552

Overall, men on average can dedicate more time to their team than women.

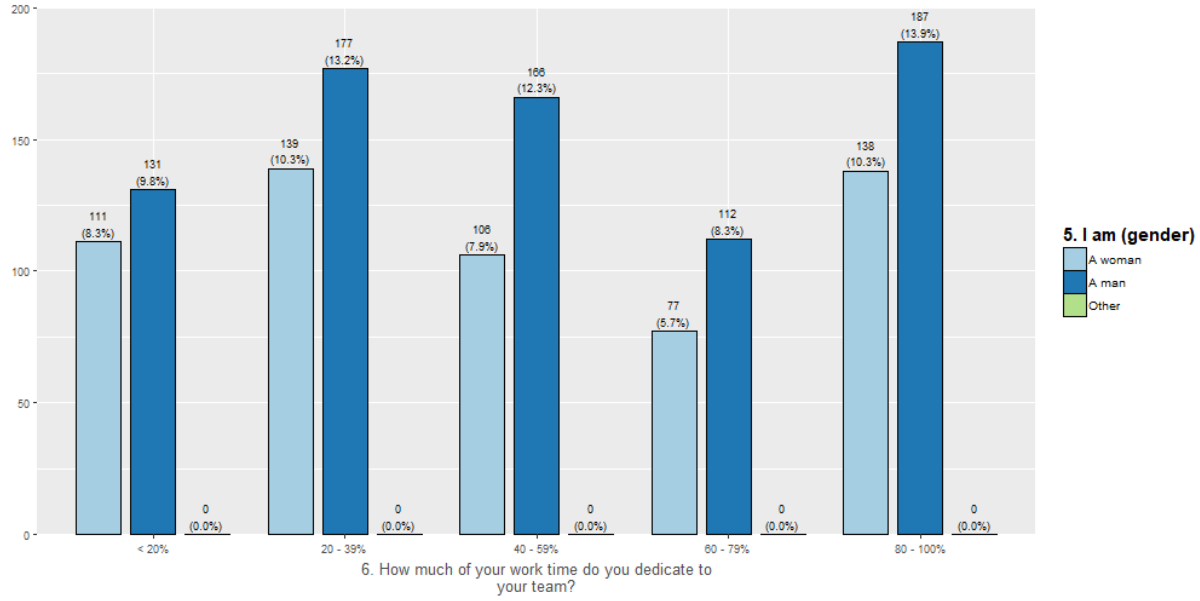


Figure 5: Working time dedicated to team by gender

Current role (v_12R)

The majority (34%) of the survey participants are currently in the position of a PhD student within their team, followed by 21% of senior researchers and 19% of post docs or junior researchers.

8. Which of the following best describes your primary, current role in the team?

value	*N*	*raw %*	*valid %*	*cumulative %*
MA Student	32	2.36	2.38	2.38
PhD Student	451	33.24	33.58	35.96
Research or lab assistant / technician	162	11.94	12.06	48.03
Postdoc / Junior researcher	254	18.72	18.91	66.94
Senior researcher	284	20.93	21.15	88.09
Team leader	160	11.79	11.91	100.00
Other, please specify:	0	0.00	0.00	100.00
missing	14	1.03		

total N=1357 · valid N=1343 · $\bar{x}$=3.59 · σ=1.48

Current role and gender (v_12R x v_7R)

The role in their team is approximately equally distributed among women and men; women have a higher share in the function of a research/ lab assistant.

8. Which of the following best describes your primary, current role in the team?	*5. I am (gender)*		***Total***
	A woman	A man	

MA Student	14 2.5%	18 2.3%	32 2.4%
PhD Student	178 31.3%	273 35.3%	451 33.6%
Research or lab assistant / technician	93 16.3%	69 8.9%	162 12.1%
Postdoc / Junior researcher	112 19.7%	142 18.4%	254 18.9%
Senior researcher	112 19.7%	171 22.1%	283 21.1%
Team leader	60 10.5%	100 12.9%	160 11.9%
Total	569 100%	773 100%	1342 100%
			χ^2=19.347 · df=5 · Cramer's V=0.120 · p=0.002

Communication with your team (v_13 to v_17)

The following figure shows that the communication of the research teams is dominated by informal or unplanned discussions (v_17). Most teams talk to their team members spontaneously and informally once a day or at least a few times a week. Formal project meetings with the majority of the team or appointments with several team members are typically scheduled not more than once per week or even once per month. The following graphic provides an overview of all item:

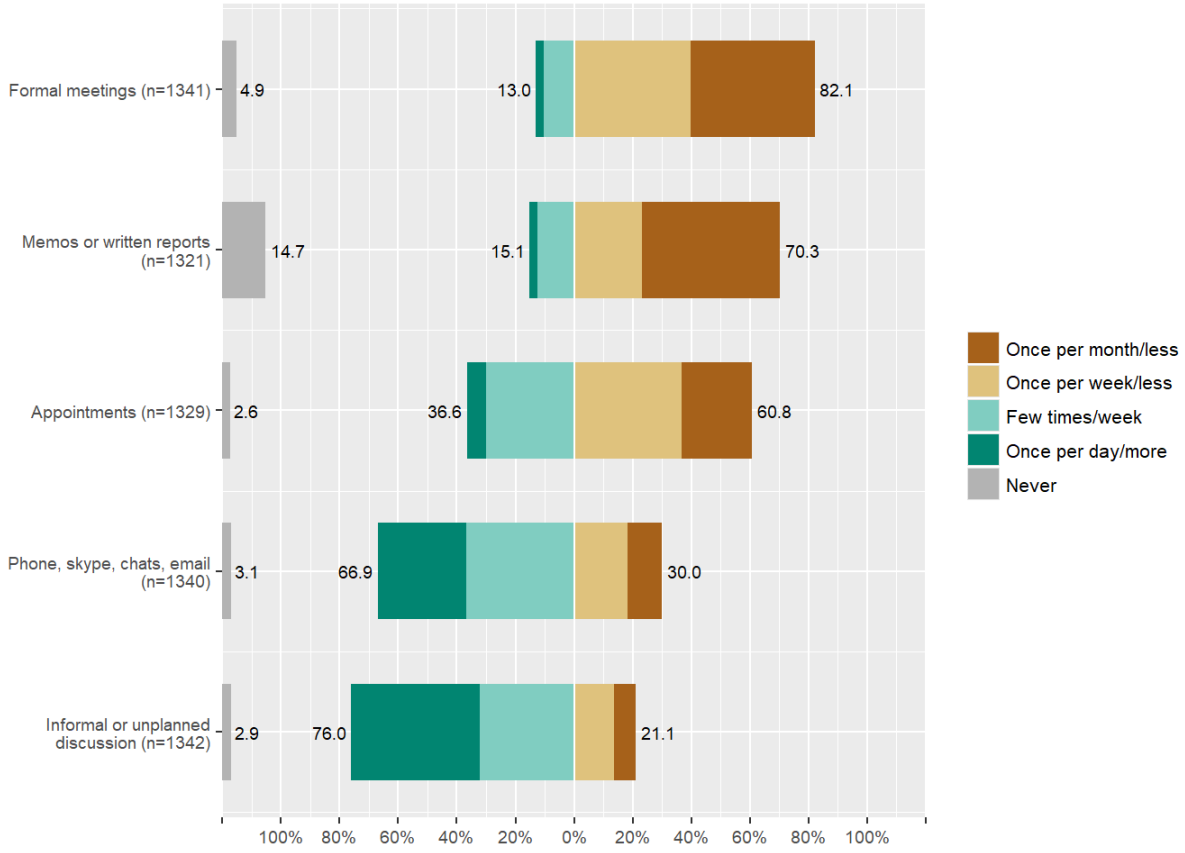


Figure 6: Communication within the team

Formal project team meetings (v_13)

Formal project team meetings with the majority of team members

value	*N*	*raw %*	*valid %*	*cumulative %*
Never	66	4.86	4.92	4.92
Once per month or less	568	41.86	42.36	47.28
Once per week or less	533	39.28	39.75	87.02
A few times per week	139	10.24	10.37	97.39
Once per day or more	35	2.58	2.61	100.00
missing	16	1.18		

total N=1357 · valid N=1341 · $\bar{x}$=2.63 · σ=0.83

Memos or written reports (v_14)

Memos or written reports of any kind

value	*N*	*raw %*	*valid %*	*cumulative %*
Never	194	14.30	14.69	14.69
Once per month or less	622	45.84	47.09	61.77
Once per week or less	306	22.55	23.16	84.94
A few times per week	165	12.16	12.49	97.43
Once per day or more	34	2.51	2.57	100.00
missing	36	2.65		

total N=1357 · valid N=1321 · $\bar{x}$=2.41 · σ=0.97

Making appointments with one or several team member(s) (v_15)

Making an appointment with one or several team member(s)

value	*N*	*raw %*	*valid %*	*cumulative %*
Never	34	2.51	2.56	2.56
Once per month or less	321	23.66	24.15	26.71
Once per week or less	487	35.89	36.64	63.36
A few times per week	399	29.40	30.02	93.38
Once per day or more	88	6.48	6.62	100.00
missing	28	2.06		

total N=1357 · valid N=1329 · $\bar{x}$=3.14 · σ=0.94

Telephone, skype calls, chats, email (v_16)

Telephone, skype calls, chats, email

value	*N*	*raw %*	*valid %*	*cumulative %*
Never	41	3.02	3.06	3.06
Once per month or less	158	11.64	11.79	14.85
Once per week or less	244	17.98	18.21	33.06
A few times per week	493	36.33	36.79	69.85
Once per day or more	404	29.77	30.15	100.00
missing	17	1.25		

total N=1357 · valid N=1340 · $\bar{x}$=3.79 · σ=1.09

Informal or unplanned discussion (e.g. just stopping by, in the hall, over coffee) (v17)

Informal or unplanned discussion (e.g. just stopping by, in the hall, over coffee

value	*N*	*raw %*	*valid %*	*cumulative %*
Never	39	2.87	2.91	2.91
Once per month or less	101	7.44	7.53	10.43
Once per week or less	183	13.49	13.64	24.07
A few times per week	433	31.91	32.27	56.33
Once per day or more	586	43.18	43.67	100.00
missing	15	1.11		

total N=1357 · valid N=1342 · $\bar{x}$=4.06 · σ=1.06

Influence on other team members (v_143, v_144, v_145)

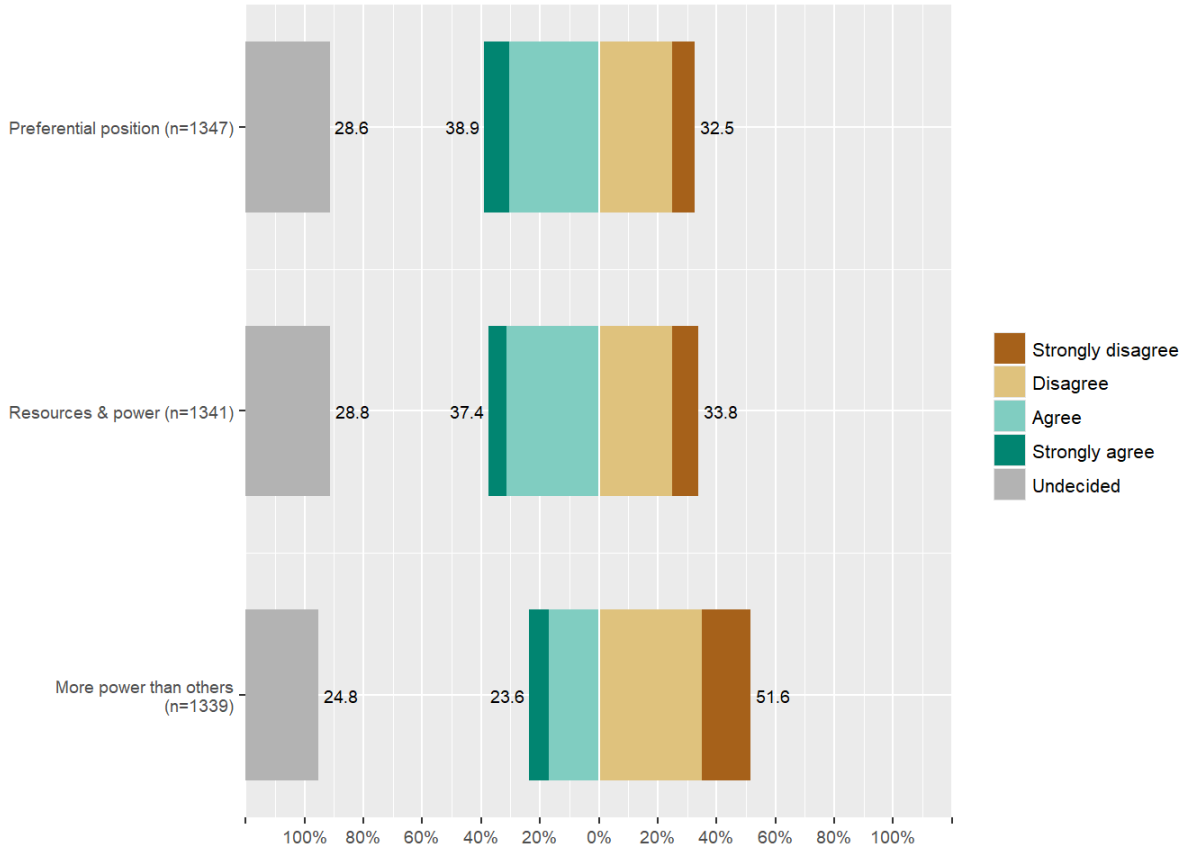


Figure 7: Power disparity

Preferential position (v_143)

I have preferential position in my team and I can easily influence the other team members

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	104	7.66	7.72	7.72
Disagree	334	24.61	24.80	32.52
Undecided	385	28.37	28.58	61.10
Agree	412	30.36	30.59	91.69
Strongly agree	112	8.25	8.31	100.00
missing	10	0.74		

total N=1357 · valid N=1347 · $\bar{x}$=3.07 · σ=1.09

Resources and power to influence the team (v_144)

I have the resources and power to influence the actions of the other team members

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	119	8.77	8.87	8.87
Disagree	334	24.61	24.91	33.78
Undecided	386	28.45	28.78	62.57
Agree	420	30.95	31.32	93.89
Strongly agree	82	6.04	6.11	100.00
missing	16	1.18		

total N=1357 · valid N=1341 · $\bar{x}$=3.01 · σ=1.08

More power within the team (v_145)

I have more power within my team compared to the other team members.

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	224	16.51	16.73	16.73
Disagree	467	34.41	34.88	51.61
Undecided	332	24.47	24.79	76.40
Agree	228	16.80	17.03	93.43
Strongly agree	88	6.48	6.57	100.00
missing	18	1.33		

total N=1357 · valid N=1339 · $\bar{x}$=2.62 · σ=1.14

Preferential position and gender (v_143 x v_7R)

5. I am (gender)	*I have preferential position in my team and I can easily influence the other team members*					***Total***
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	
A woman	57 9.9%	157 27.4%	174 30.3%	148 25.8%	38 6.6%	574 100%
A man	47 6.1%	177 22.9%	210 27.2%	264 34.2%	74 9.6%	772 100%
Total	104 7.7%	334 24.8%	384 28.5%	412 30.6%	112 8.3%	1346 100%

χ^2=21.096 · df=4 · Cramer's V=0.125 · p=0.000

Resources and power to influence the team and gender (v_144 x v_7R)

5. I am (gender)	*I have the resources and power to influence the actions of the other team members*					***Total***
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	
A woman	57 10%	146 25.6%	170 29.8%	171 30%	26 4.6%	570 100%
A man	62 8.1%	188 24.4%	216 28.1%	248 32.2%	56 7.3%	770 100%
Total	119 8.9%	334 24.9%	386 28.8%	419 31.3%	82 6.1%	1340 100%

χ^2=6.391 · df=4 · Cramer's V=0.069 · p=0.172

More power within the team and gender (v_145 x v_7R)

5. I am (gender)	*I have more power within my team compared to the other team members.*					***Total***
	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	
A woman	114 20%	209 36.6%	136 23.8%	81 14.2%	31 5.4%	571 100%
A man	110 14.3%	257 33.5%	196 25.6%	147 19.2%	57 7.4%	767 100%
Total	224 16.7%	466 34.8%	332 24.8%	228 17%	88 6.6%	1338 100%

χ^2=14.240 · df=4 · Cramer's V=0.103 · p=0.007

Team climate (v_151 to v_164)

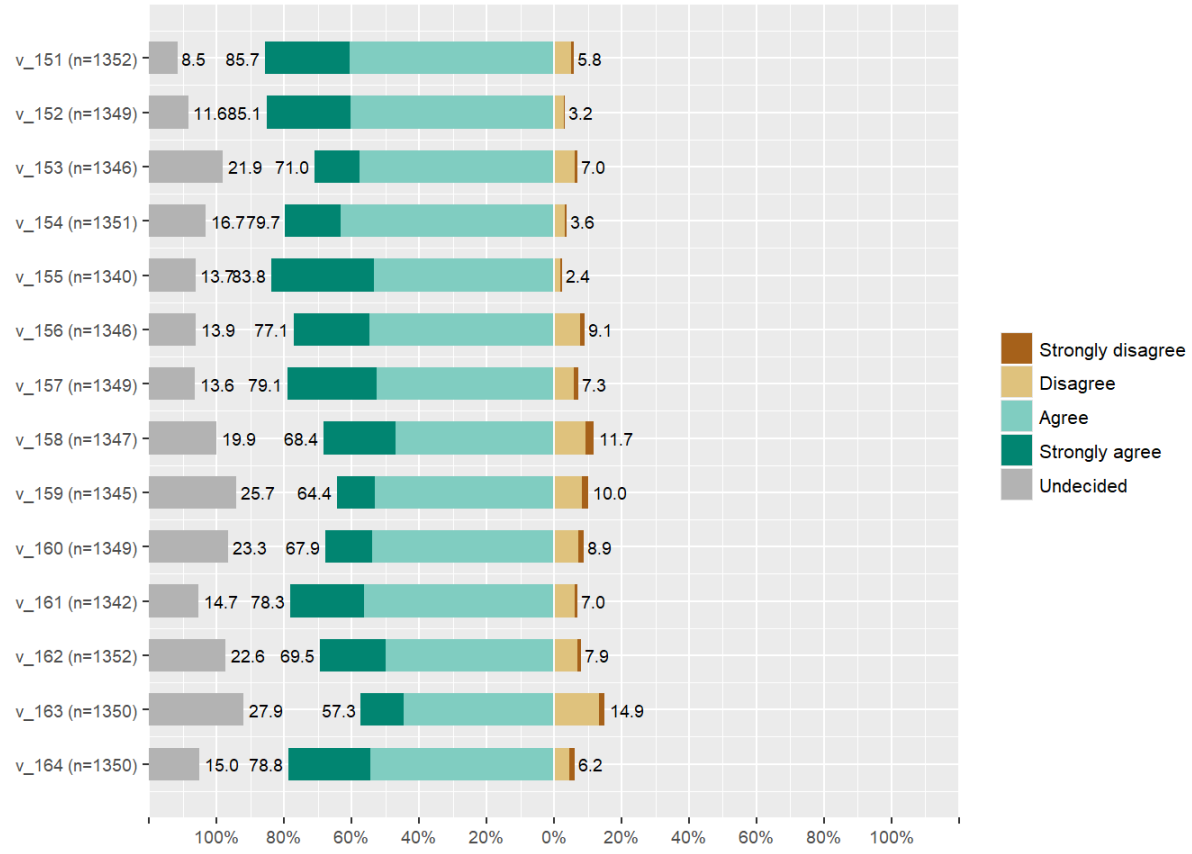


Figure 8: Team climate question items

Clear about team´s objectives (v_151)

I am clear about what my team's objectives are

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	10	0.74	0.74	0.74
Disagree	69	5.08	5.10	5.84
Undecided	115	8.47	8.51	14.35
Agree	819	60.35	60.58	74.93
Strongly agree	339	24.98	25.07	100.00
missing	5	0.37		

total N=1357 · valid N=1352 · x̄=4.04 · σ=0.78

Agreement with the team´s objectives (v_152)

I am in agreement with the team's objectives

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	6	0.44	0.44	0.44
Disagree	38	2.80	2.82	3.26
Undecided	157	11.57	11.64	14.90
Agree	814	59.99	60.34	75.24
Strongly agree	334	24.61	24.76	100.00
missing	8	0.59		

total N=1357 · valid N=1349 · x̄=4.06 · σ=0.72

Team´s objectives are clearly understood by other team members (v_153)

The team's objectives are clearly understood by other members of the team

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	14	1.03	1.04	1.04
Disagree	81	5.97	6.02	7.06
Undecided	295	21.74	21.92	28.97
Agree	775	57.11	57.58	86.55
Strongly agree	181	13.34	13.45	100.00
missing	11	0.81		

total N=1357 · valid N=1346 · $\bar{x}$=3.76 · σ=0.80

Team´s objectives can be achieved (v_154)

The team's objectives can actually be achieved

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	7	0.52	0.52	0.52
Disagree	42	3.10	3.11	3.63
Undecided	226	16.65	16.73	20.36
Agree	855	63.01	63.29	83.64
Strongly agree	221	16.29	16.36	100.00
missing	6	0.44		

total N=1357 · valid N=1351 · $\bar{x}$=3.92 · σ=0.70

Team´s objectives are worthwhile to the organisation (v_155)

The team's objectives are worthwhile to the organisation

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	7	0.52	0.52	0.52
Disagree	26	1.92	1.94	2.46
Undecided	183	13.49	13.66	16.12
Agree	716	52.76	53.43	69.55
Strongly agree	408	30.07	30.45	100.00
missing	17	1.25		

total N=1357 · valid N=1340 · $\bar{x}$=4.11 · σ=0.74

Keep each other informed about work-related issues in the team (v_156)

We keep each other informed about work-related issues in the team

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	20	1.47	1.49	1.49
Disagree	102	7.52	7.58	9.06
Undecided	187	13.78	13.89	22.96
Agree	737	54.31	54.75	77.71
Strongly agree	300	22.11	22.29	100.00
missing	11	0.81		

total N=1357 · valid N=1346 · $\bar{x}$=3.89 · σ=0.89

Real attempts to share information throughout the team (v_157)

There are real attempts to share information throughout the team

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	20	1.47	1.48	1.48
Disagree	78	5.75	5.78	7.26
Undecided	184	13.56	13.64	20.90
Agree	708	52.17	52.48	73.39
Strongly agree	359	26.46	26.61	100.00
missing	8	0.59		

total N=1357 · valid N=1349 · $\bar{x}$=3.97 · σ=0.88

´We are in it together´ attitude (v_158)

We have a 'we are in it together' attitude

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	31	2.28	2.30	2.30
Disagree	127	9.36	9.43	11.73
Undecided	268	19.75	19.90	31.63
Agree	634	46.72	47.07	78.69
Strongly agree	287	21.15	21.31	100.00
missing	10	0.74		

total N=1357 · valid N=1347 · $\bar{x}$=3.76 · σ=0.97

Prepared to question the basis of what the team is doing (v_159)

We are prepared to question the basis of what the team is doing

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	24	1.77	1.78	1.78
Disagree	110	8.11	8.18	9.96
Undecided	345	25.42	25.65	35.61
Agree	713	52.54	53.01	88.62
Strongly agree	153	11.27	11.38	100.00
missing	12	0.88		

total N=1357 · valid N=1345 · $\bar{x}$=3.64 · σ=0.85

Critical appraisal of potential weaknesses in what they do (v_160)

We critically appraise potential weaknesses in what we are doing in order to achieve the best possible outcome

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	21	1.55	1.56	1.56
Disagree	98	7.22	7.26	8.82
Undecided	314	23.14	23.28	32.10
Agree	728	53.65	53.97	86.06
Strongly agree	188	13.85	13.94	100.00
missing	8	0.59		

total N=1357 · valid N=1349 · $\bar{x}$=3.71 · σ=0.85

Building on each other´s ideas (v_161)

We build on each other's ideas in order to achieve the best possible outcome

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	13	0.96	0.97	0.97
Disagree	81	5.97	6.04	7.00
Undecided	197	14.52	14.68	21.68
Agree	757	55.78	56.41	78.09
Strongly agree	294	21.67	21.91	100.00
missing	15	1.11		

total N=1357 · valid N=1342 · $\bar{x}$=3.92 · σ=0.83

Searching for fresh, new ways of looking at problems (v_162)

We are always searching for fresh, new ways of looking at problems

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	15	1.11	1.11	1.11
Disagree	92	6.78	6.80	7.91
Undecided	305	22.48	22.56	30.47
Agree	675	49.74	49.93	80.40
Strongly agree	265	19.53	19.60	100.00
missing	5	0.37		

total N=1357 · valid N=1352 · $\bar{x}$=3.80 · σ=0.87

Taking the time needed to develop new ideas (v_163)

We take the time needed to develop new ideas

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	22	1.62	1.63	1.63
Disagree	179	13.19	13.26	14.89
Undecided	376	27.71	27.85	42.74
Agree	602	44.36	44.59	87.33
Strongly agree	171	12.60	12.67	100.00
missing	7	0.52		

total N=1357 · valid N=1350 · $\bar{x}$=3.53 · σ=0.93

Co-operation to help each other and apply new ideas (v_164)

We co-operate in order to help each other and apply new ideas

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	22	1.62	1.63	1.63
Disagree	62	4.57	4.59	6.22
Undecided	203	14.96	15.04	21.26
Agree	734	54.09	54.37	75.63
Strongly agree	329	24.24	24.37	100.00
missing	7	0.52		

total N=1357 · valid N=1350 · $\bar{x}$=3.95 · σ=0.85

Team leaders´ leadership style (v_170 to v_180)

The question was: “Please assess your team leaders’ leadership style.” Team leaders were not able to respond to this question.

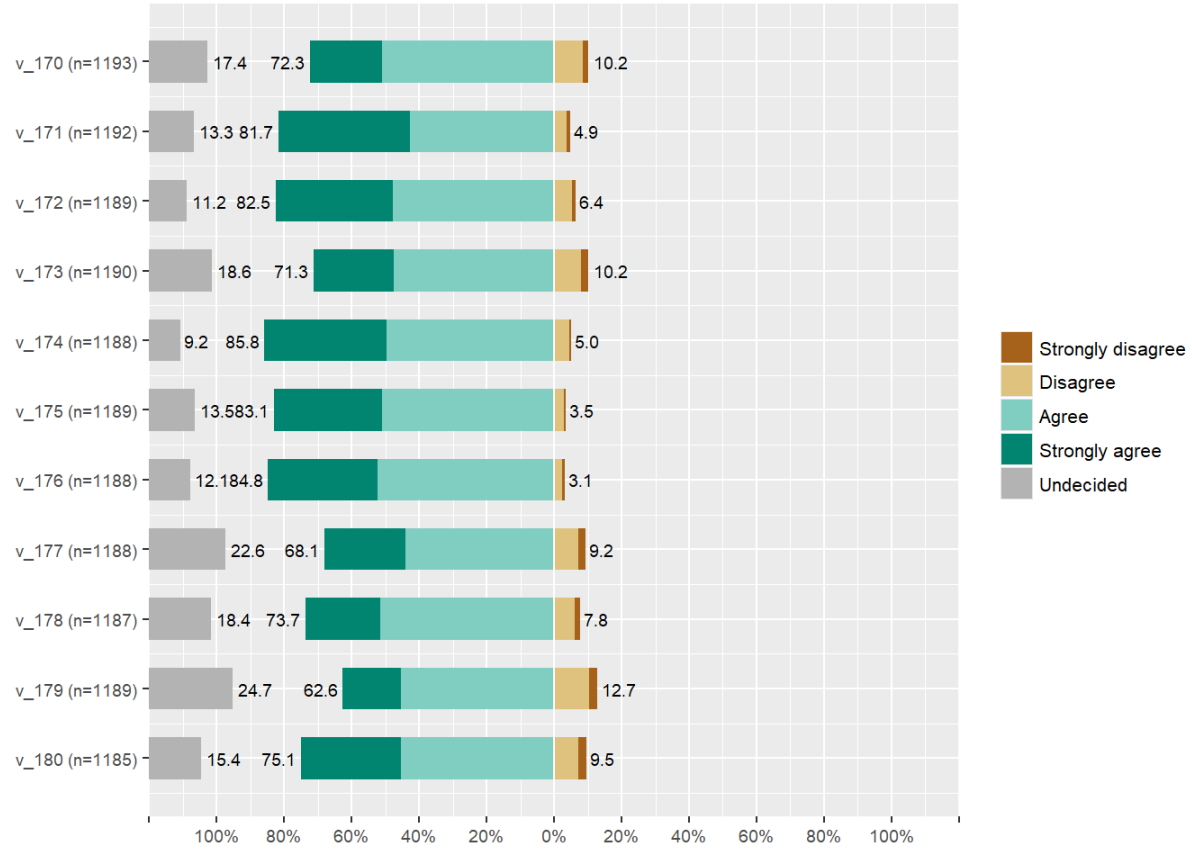


Figure 9: Team leadership

Motivation (v_170)

She/he develops ways of motivating us

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	19	1.40	1.59	1.59
Disagree	103	7.59	8.63	10.23
Undecided	208	15.33	17.44	27.66
Agree	609	44.88	51.05	78.71
Strongly agree	254	18.72	21.29	100.00
missing	164	12.09		

total N=1357 · valid N=1193 · $\bar{x}$=3.82 · σ=0.92

Proud to work with the team leader (v_171)

I feel proud to work with her/him

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	16	1.18	1.34	1.34
Disagree	43	3.17	3.61	4.95
Undecided	159	11.72	13.34	18.29
Agree	509	37.51	42.70	60.99
Strongly agree	465	34.27	39.01	100.00
missing	165	12.16		

total N=1357 · valid N=1192 · $\bar{x}$=4.14 · σ=0.88

Trust in the team leader´s ability to overcome any obstacle (v_172)

I feel proud to work with her/him

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	16	1.18	1.34	1.34
Disagree	43	3.17	3.61	4.95
Undecided	159	11.72	13.34	18.29
Agree	509	37.51	42.70	60.99
Strongly agree	465	34.27	39.01	100.00
missing	165	12.16		

total N=1357 · valid N=1192 · $\bar{x}$=4.14 · σ=0.88

Team leader´s concern about training (v_173)

She/he is concerned with training those who need it

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	26	1.92	2.18	2.18
Disagree	95	7.00	7.98	10.17
Undecided	221	16.29	18.57	28.74
Agree	565	41.64	47.48	76.22
Strongly agree	283	20.85	23.78	100.00
missing	167	12.31		

total N=1357 · valid N=1190 · $\bar{x}$=3.83 · σ=0.95

Team leader´s advice (v_174)

She/he gives advice to those who need it

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	6	0.44	0.51	0.51
Disagree	54	3.98	4.55	5.05
Undecided	109	8.03	9.18	14.23
Agree	589	43.40	49.58	63.80
Strongly agree	430	31.69	36.20	100.00
missing	169	12.45		

total N=1357 · valid N=1188 · x̄=4.16 · σ=0.81

Getting the team members to rely on reasoning and evidence (v_175)

She/he gets us to rely on reasoning and evidence to solve problems

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	7	0.52	0.59	0.59
Disagree	34	2.51	2.86	3.45
Undecided	160	11.79	13.46	16.90
Agree	606	44.66	50.97	67.87
Strongly agree	382	28.15	32.13	100.00
missing	168	12.38		

total N=1357 · valid N=1189 · x̄=4.11 · σ=0.78

Promoting the use of intelligence to overcome obstacles (v_176)

She/he promotes the use of intelligence to overcome obstacles

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	7	0.52	0.59	0.59
Disagree	30	2.21	2.53	3.11
Undecided	144	10.61	12.12	15.24
Agree	622	45.84	52.36	67.59
Strongly agree	385	28.37	32.41	100.00
missing	169	12.45		

total N=1357 · valid N=1188 · $\bar{x}$=4.13 · σ=0.76

Presenting things through an approach that stimulates (v_177)

She/he presents things through an approach that stimulates me

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	24	1.77	2.02	2.02
Disagree	86	6.34	7.24	9.26
Undecided	269	19.82	22.64	31.90
Agree	523	38.54	44.02	75.93
Strongly agree	286	21.08	24.07	100.00
missing	169	12.45		

total N=1357 · valid N=1188 · $\bar{x}$=3.81 · σ=0.95

Realistic expectations on the outcome of work (v_178)

She/he has realistic expectations on the outcome of my work

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	20	1.47	1.68	1.68
Disagree	73	5.38	6.15	7.83
Undecided	219	16.14	18.45	26.28
Agree	613	45.17	51.64	77.93
Strongly agree	262	19.31	22.07	100.00
missing	170	12.53		

total N=1357 · valid N=1187 · $\bar{x}$=3.86 · σ=0.89

Realistic expectations on time schedules (v_179)

She/he has realistic expectations on the time schedule I need for my work

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	27	1.99	2.27	2.27
Disagree	124	9.14	10.43	12.70
Undecided	294	21.67	24.73	37.43
Agree	541	39.87	45.50	82.93
Strongly agree	203	14.96	17.07	100.00
missing	168	12.38		

total N=1357 · valid N=1189 · $\bar{x}$=3.65 · σ=0.96

Fostering trust, involvement and co-operation among team members (v_180)

She/he actively fosters trust, involvement and cooperation among team members

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	27	1.99	2.28	2.28
Disagree	85	6.26	7.17	9.45
Undecided	183	13.49	15.44	24.89
Agree	537	39.57	45.32	70.21
Strongly agree	353	26.01	29.79	100.00
missing	172	12.68		

total N=1357 · valid N=1185 · $\bar{x}$=3.93 · σ=0.97

Working climate at the wider working environment (v_186 to v_189)

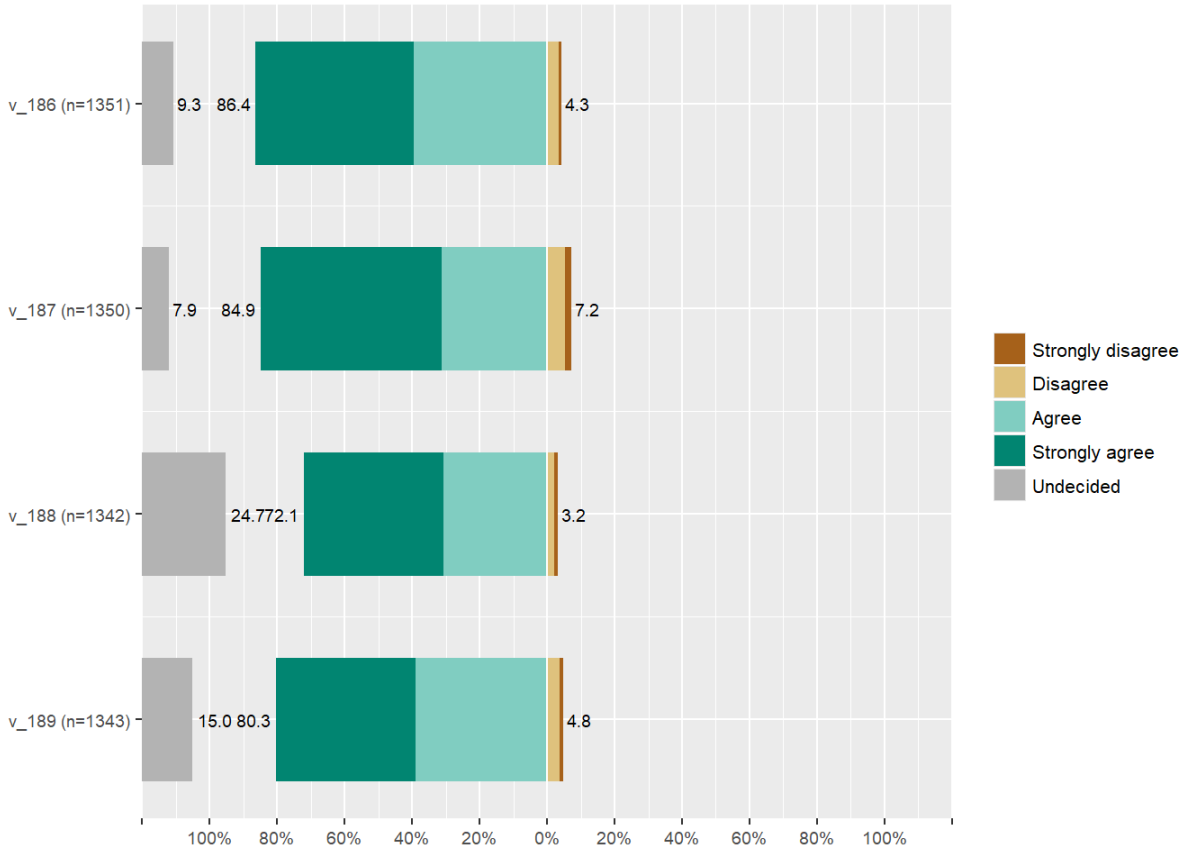


Figure 10: Working climate – all items

Senior employees respect junior male and female employees equally (v_186)

Senior employees respect junior male and female employees equally

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	11	0.81	0.81	0.81
Disagree	47	3.46	3.48	4.29
Undecided	125	9.21	9.25	13.55
Agree	534	39.35	39.53	53.07
Strongly agree	634	46.72	46.93	100.00
missing	6	0.44		

total N=1357 · valid N=1351 · x̄=4.28 · σ=0.83

Attention when women speak or when men speak (meetings) (v_187)

In meetings, people pay just as much attention when women speak as when men speak

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	27	1.99	2.00	2.00
Disagree	70	5.16	5.19	7.19
Undecided	107	7.89	7.93	15.11
Agree	423	31.17	31.33	46.44
Strongly agree	723	53.28	53.56	100.00
missing	7	0.52		

total N=1357 · valid N=1350 · x̄=4.29 · σ=0.96

Allegations of gender based or sexual harassment are taken seriously (v_188)

Allegations of gender based and sexual harassment are taken seriously by management

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	13	0.96	0.97	0.97
Disagree	29	2.14	2.16	3.13
Undecided	332	24.47	24.74	27.87
Agree	414	30.51	30.85	58.72
Strongly agree	554	40.83	41.28	100.00
missing	15	1.11		

total N=1357 · valid N=1342 · $\bar{x}$=4.09 · σ=0.91

Feeling comfortable to raise issues about the treatment of women or men (v_189)

In this organisation, I would feel comfortable to raise issues about the treatment of women or men

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	16	1.18	1.19	1.19
Disagree	48	3.54	3.57	4.77
Undecided	201	14.81	14.97	19.73
Agree	525	38.69	39.09	58.82
Strongly agree	553	40.75	41.18	100.00
missing	14	1.03		

total N=1357 · valid N=1343 · $\bar{x}$=4.15 · σ=0.89

Mentoring

Senior team member as mentor (v_63)

14. Is there any senior member within your team whom you currently regard as a mentor - someone who gives advice and counsel on career issues and/or sponsors or advocates for you?

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes	736	54.24	54.64	54.64
No	611	45.03	45.36	100.00
missing	10	0.74		

total N=1357 · valid N=1347 · $\bar{x}$=1.45 · σ=0.50

Gender of the mentored team member (v_63 x v_7R)

Taking the gender of the mentored team member into consideration, women have slightly fewer times a mentor (53%) than men (56%).

5. I am (gender)	*14. Is there any senior member within your team whom you currently regard as a mentor – someone who gives advice and counsel on career issues and/or sponsors or advocates for you?*		***Total***
	Yes	No	
A woman	302 52.5%	273 47.5%	575 100%
A man	434 56.3%	337 43.7%	771 100%
Total	736 54.7%	610 45.3%	1346 100%

χ^2=1.739 · df=1 · φ=0.037 · p=0.187

Gender of mentor (v_64)

Asked about the gender of the mentor, 513 (65%) state that the mentor is a man, only 278

(35%) state that the mentor is a woman.

14a. My mentor is (gender)

value	*N*	*raw %*	*valid %*	*cumulative %*
A man	513	37.80	64.85	64.85
A woman	278	20.49	35.15	100.00
missing	566	41.71		

total N=1357 · valid N=791 · x̄=1.35 · σ=0.48

Level of mentoring (v_70 to v_79)

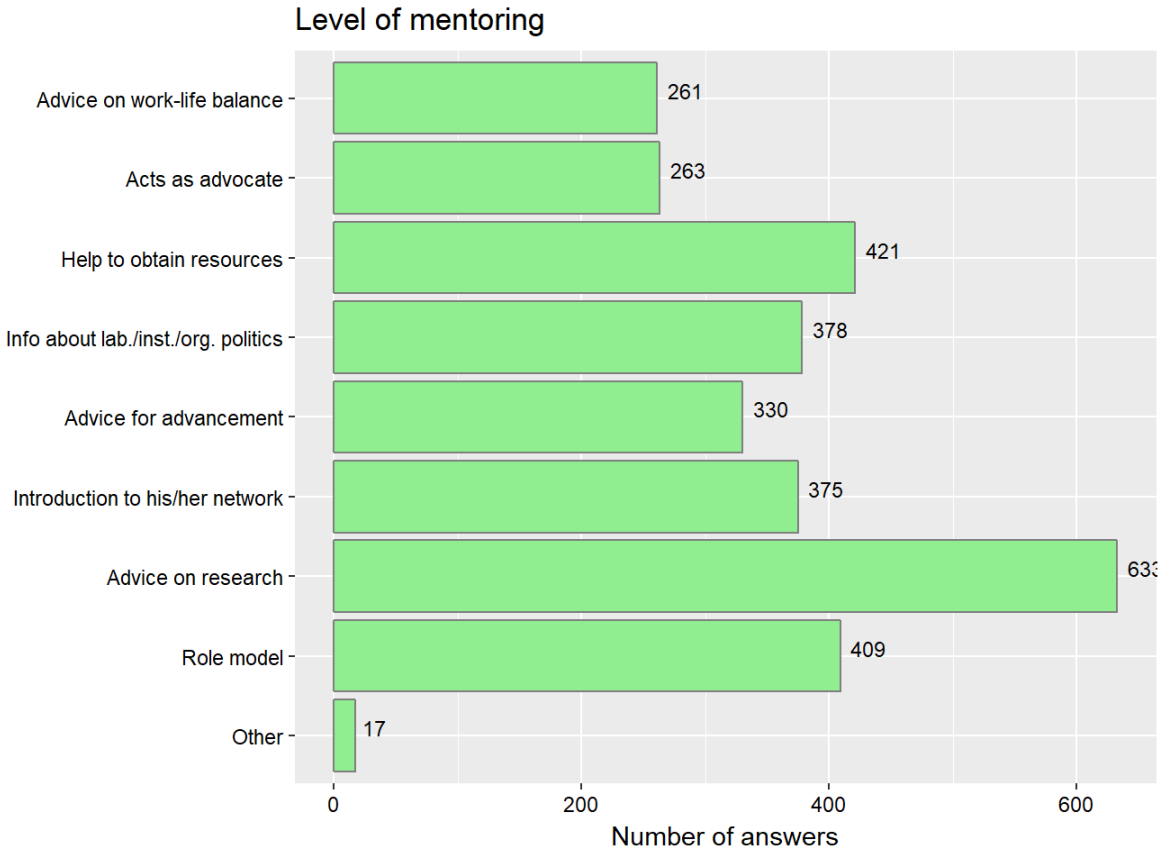


Figure 11: Level of mentoring - all items

Role Model (v_72)

Serves as a role model

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	948	69.86	69.86	69.86
quoted	409	30.14	30.14	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.30 · σ=0.46

Advice on research (v_73)

Gives advice on my research directions

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	724	53.35	53.35	53.35
quoted	633	46.65	46.65	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.47 · σ=0.50

Introduction to his/her professional networks (v_74)

Introduces me to his/her professional networks

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	982	72.37	72.37	72.37
quoted	375	27.63	27.63	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.28 · σ=0.45

Advice about preparation for advancement (v_75)

Advises about preparation for advancement (e.g. promotion, leadership position)

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1027	75.68	75.68	75.68
quoted	330	24.32	24.32	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.24 · σ=0.43

Information about laboratory, institute, organisational politics (v_76)

Informs me about laboratory / institute / organisational politics

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	979	72.14	72.14	72.14
quoted	378	27.86	27.86	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.28 · σ=0.45

Help to obtain resources (v_77)

Helps to obtain resources (funding, grants, etc.) that I need

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	936	68.98	68.98	68.98
quoted	421	31.02	31.02	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.31 · σ=0.46

Acting as advocate (v_78)

Acts as an advocate for me

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1094	80.62	80.62	80.62
quoted	263	19.38	19.38	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.19 · σ=0.40

Advice on work-life balance (v_79)

Provides advice on work-life balance

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1096	80.77	80.77	80.77
quoted	261	19.23	19.23	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.19 · σ=0.39

Others (v_70)

Other, please specify:

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1340	98.75	98.75	98.75
quoted	17	1.25	1.25	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.01 · σ=0.11

Type of contract (v_80)

15. What type of contract do you have?

value	*N*	*raw %*	*valid %*	*cumulative %*
Temporary / casual	797	58.73	59.30	59.30
Permanent / tenured	547	40.31	40.70	100.00
missing	13	0.96		

total N=1357 · valid N=1344 · x̄=1.41 · σ=0.49

Type of contract and gender (v_80 x v_7R)

When taking gender into consideration, there is no difference between men and women regarding the %-shares of the type of contract.

15. What type of contract do you have?	*5. I am (gender)*		***Total***
	A woman	A man	
Temporary / casual	341 59.4%	456 59.3%	797 59.3%
Permanent / tenured	233 40.6%	313 40.7%	546 40.7%
Total	574 100%	769 100%	1343 100%

χ^2=0.000 · df=1 · φ=0.001 · p=1.000

Contracted hours (v_81)

The majority, about 84%, have a full-time contract.

16. How many hours a week are you contracted for?

value	*N*	*raw %*	*valid %*	*cumulative %*
Less than 20 hours/ week (part time)	99	7.30	7.38	7.38
20 up to 35 hours/week (part time)	122	8.99	9.10	16.48
More than 35 hours (full time)	1120	82.54	83.52	100.00
missing	16	1.18		

total N=1357 · valid N=1341 · $\bar{x}$=2.76 · σ=0.57

Contracted hours and gender (v_81 x v_7R)

When taking gender into consideration, more men (86%) than women (80%) have a full-time contract.

5. I am (gender)	*16 How many hours a week are you contracted for?*			***Total***
	Less than 20 hours/ week (part time)	20 up to 35 hours/week (part time)	More than 35 hours (full time)	
A woman	47 8.2%	69 12%	457 79.8%	573 100%
A man	52 6.8%	53 6.9%	662 86.3%	767 100%
Total	99 7.4%	122 9.1%	1119 83.5%	1340 100%

χ^2=12.073 · df=2 · Cramer's V=0.095 · p=0.002

Actual working hours (v_82)

17. How many hours do you actually work per week in this job?

value	*N*	*raw %*	*valid %*	*cumulative %*
As many hours as I am contracted for	405	29.85	30.25	30.25
1-5 hours more than I am contracted for	379	27.93	28.30	58.55
6-10 hours more than I am contracted for	283	20.85	21.14	79.69
11 hours or more than I am contracted for	272	20.04	20.31	100.00
missing	18	1.33		

total N=1357 · valid N=1339 · $\bar{x}$=2.32 · σ=1.11

Actual working hours and gender (v_82 x v_7R)

5. I am (gender)	*17. How many hours do you actually work per week in this job?*				***Total***
	As many hours as I am contracted for	1-5 hours more than I am contracted for	6-10 hours more than I am contracted for	11 hours or more than I am contracted for	
A woman	203 35.7%	165 29%	112 19.7%	89 15.6%	569 100%
A man	202 26.3%	213 27.7%	171 22.2%	183 23.8%	769 100%
Total	405 30.3%	378 28.3%	283 21.2%	272 20.3%	1338 100%

χ^2=21.468 · df=3 · Cramer's V=0.127 · p=0.000

Years of experience in research area (v_83)

18. How many years of experience do you have in your research area (including PhD years if applicable)?

value	*N*	*raw %*	*valid %*	*cumulative %*
2 years or less	273	20.12	20.27	20.27
3-5 years	329	24.24	24.42	44.69
6-9 years	228	16.80	16.93	61.62
10-19 years	332	24.47	24.65	86.27
20-29 years	144	10.61	10.69	96.96
30 years or more	41	3.02	3.04	100.00
missing	10	0.74		

total N=1357 · valid N=1347 · $\bar{x}$=2.90 · σ=1.41

Raising of external funding

The possible answers to the question of "How much external funding have you raised as lead researcher since 1st January 2013 for your institution or your person?" was slightly differently in dependence to the common currency in the country. Therefore, there is data about EUR (majority of data) and GBP.

Raising of external funding EUR (v_84)

19. (EUR) How much external funding have you raised as lead researcher since 1st January 2013 for your institution or your person?

value	*N*	*raw %*	*valid %*	*cumulative %*
none	691	50.92	53.03	53.03
less than 9999 EUR	101	7.44	7.75	60.78
10 000 - 24 999 EUR	83	6.12	6.37	67.15
25 000 - 49 999 Euro	67	4.94	5.14	72.29
50 000 - 99 999 Euro	66	4.86	5.07	77.36
100 000 - 499 999 Euro	162	11.94	12.43	89.79
more than 500 000 Euro	133	9.80	10.21	100.00
missing	54	3.98		

total N=1357 · valid N=1303 · $\bar{x}$=2.80 · σ=2.27

Raising of external funds EUR and gender (v_84 x v_7R)

When taking gender into consideration, the share of women is slightly higher in the categories of raising funds up to 49,999 Euros, whereas in the categories from 50,000 Euros onwards it is reversed: the share of men is higher.

19. (EUR) How much external funding have you raised as lead researcher since 1st January 2013 for your institution or your person?	5. *I am (gender)*		***Total***
	A woman	A man	
none	295 42.8% 54.3%	395 57.2% 52%	690 100% 53%
less than 9999 EUR	48 47.5% 8.8%	53 52.5% 7%	101 100% 7.8%
10 000 - 24 999 EUR	43 51.8% 7.9%	40 48.2% 5.3%	83 100% 6.4%
25 000 - 49 999 Euro	29 43.3% 5.3%	38 56.7% 5%	67 100% 5.1%
50 000 - 99 999 Euro	26 39.4% 4.8%	40 60.6% 5.3%	66 100% 5.1%
100 000 - 499 999 Euro	55 34% 10.1%	107 66% 14.1%	162 100% 12.4%
more than 500 000 Euro	47 35.3% 8.7%	86 64.7% 11.3%	133 100% 10.2%
Total	543 41.7% 100%	759 58.3% 100%	1302 100% 100%
			χ^2=11.641 · df=6 · Cramer's V=0.095 · p=0.070

Raising of external funding GBP (v_208)

19. (UK) How much external funding have you raised as lead researcher since 1st January 2013 for your institution or your person?

value	*N*	*raw %*	*valid %*	*cumulative %*
none	17	1.25	77.27	77.27
less than 9999 GBP	2	0.15	9.09	86.36
10 000 - 24 999 GBP	0	0.00	0.00	86.36
25 000 - 49 999 GBP	0	0.00	0.00	86.36
50 000 - 99 999 GBP	2	0.15	9.09	95.45
100 000 - 499 999 GBP	0	0.00	0.00	95.45
more than 500 000 GBP	1	0.07	4.55	100.00
missing	1335	98.38		

total N=1357 · valid N=22 · $\bar{x}$=1.73 · σ=1.67

Raising of external funding GBP and gender (v_208 x v_7R)

19. (UK) How much external funding have you raised as lead researcher since 1st January2013 for your institution or your person?	5. *I am (gender)*		***Total***
	A woman	A man	
none	12 70.6% 100%	5 29.4% 50%	17 100% 77.3%
less than 9999 GBP	0 0% 0%	2 100% 20%	2 100% 9.1%
10 000 - 24 999 GBP	0 0% 0%	0 0% 0%	0 100% 0%
25 000 - 49 999 GBP	0 0% 0%	0 0% 0%	0 100% 0%
50 000 - 99 999 GBP	0 0% 0%	2 100% 20%	2 100% 9.1%
100 000 - 499 999 GBP	0 0% 0%	0 0% 0%	0 100% 0%
more than 500 000 GBP	0 0% 0%	1 100% 10%	1 100% 4.5%
Total	12 54.5% 100%	10 45.5% 100%	22 100% 100%

χ^2=7.765 · df=3 · Cramer's V=0.594 · Fisher's p=0.007

Weekly working time on activities that are geared towards publications and patents (v_85)

Almost 29% of the participants spend 20% or less of their time on activities geared towards publications and patents, in contrast to 13% who dedicate 80% or more working time towards that goal. Only 8% of the participants state that work towards publications in terms of papers or patents is not considered part of their work.

20. How much of your weekly working time can you spend on average on activities that are geared towards publications and patents?

value	*N*	*raw %*	*valid %*	*cumulative %*
< 20%	389	28.67	28.84	28.84
20 - 39%	280	20.63	20.76	49.59
40 - 59%	219	16.14	16.23	65.83
60 - 79%	184	13.56	13.64	79.47
80 - 100%	171	12.60	12.68	92.14
Publications/ patents are typically not part of my work	106	7.81	7.86	100.00
missing	8	0.59		

total N=1357 · valid N=1349 · $\bar{x}$=2.84 · σ=1.64

Weekly working time on activities that are geared towards publications and patents and gender (v_85 x v_7R)

20. How much of your weekly working time can you spend on average on activities that are geared towards publications and patents?	5. *I am (gender)*		***Total***
	A woman	A man	
< 20%	162 41.8% 28.3%	226 58.2% 29.1%	388 100% 28.8%
20 - 39%	116 41.4% 20.3%	164 58.6% 21.1%	280 100% 20.8%
40 - 59%	88 40.2% 15.4%	131 59.8% 16.9%	219 100% 16.2%
60 - 79%	73 39.7% 12.8%	111 60.3% 14.3%	184 100% 13.6%
80 - 100%	66 38.6% 11.5%	105 61.4% 13.5%	171 100% 12.7%
Publications/ patents are typically not part of my work	67 63.2% 11.7%	39 36.8% 5%	106 100% 7.9%
Total	572 42.4% 100%	776 57.6% 100%	1348 100% 100%

χ^2=20.975 · df=5 · Cramer's V=0.125 · p=0.001

Editor of scientific journals that have an impact factor (v_86)

21. Are you an editor of scientific journals that have an impact factor? If yes, to how many (next table v_96)?

value	*N*	*raw %*	*valid %*	*cumulative %*
No	1224	90.20	90.67	90.67
Yes,	126	9.29	9.33	100.00
missing	7	0.52		

total N=1357 · valid N=1350 · x̄=1.09 · σ=0.29

Editor: Numbers of scientific journals that have an impact factor (v_96)

Yes

value	*N*	*raw %*	*valid %*	*cumulative %*
-99	1231	90.71	90.71	90.71
1	67	4.94	4.94	95.65
2	33	2.43	2.43	98.08
3	19	1.40	1.40	99.48
4	3	0.22	0.22	99.71
5	1	0.07	0.07	99.78
6	1	0.07	0.07	99.85
7	1	0.07	0.07	99.93
8	1	0.07	0.07	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=-89.64 · σ=29.27

Memberships of a management board of a professional or scientific association (v_87)

22. Are you a member of a management board of a professional or scientific association in your field?

If yes, to how many?

value	*N*	*raw %*	*valid %*	*cumulative %*
No	1114	82.09	82.70	82.70
Yes	233	17.17	17.30	100.00
missing	10	0.74		

total N=1357 · valid N=1347 · x̄=1.17 · σ=0.38

Number of memberships of a management board of a professional or scientific association (v_97)

Yes

value	*N*	*raw %*	*valid %*	*cumulative %*
-99	1136	83.71	83.71	83.71
1	125	9.21	9.21	92.93
2	60	4.42	4.42	97.42
3	22	1.62	1.62	99.04
4	7	0.52	0.52	99.56
5	4	0.29	0.29	99.85
6	2	0.15	0.15	100.00
10	1	0.07	0.07	93.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=1.34 · σ=0.97

Involvement of citizens in the discussion of implications of research (v_95)

25. Do you involve citizens in the discussion of the implications of your research?

value	*N*	*raw %*	*valid %*	*cumulative %*
On a regular basis	145	10.69	10.78	10.78
Occasionally	688	50.70	51.15	61.93
Never	512	37.73	38.07	100.00
missing	12	0.88		

total N=1357 · valid N=1345 · $\bar{x}$=2.27 · σ=0.64

Engagement in dissemination and knowledge transfer activities during the past year (v_213 to v_220)

Asked about the engagement in dissemination and knowledge transfer activities during the past year, by far the most answers is noted for "workshops and dissemination events for academic audiences" with 937 answers (69%). The second most selected answer with 470 (35%) is "workshops and dissemination events for non-academic audiences (e.g. schools, teachers)". The least selected activity is "social media including blogs for my professional work (on a regular basis) with 192 answers (14%). Finally, 261 answers (19%) state that they are not at all engaged in dissemination and transfer activities during the past year.

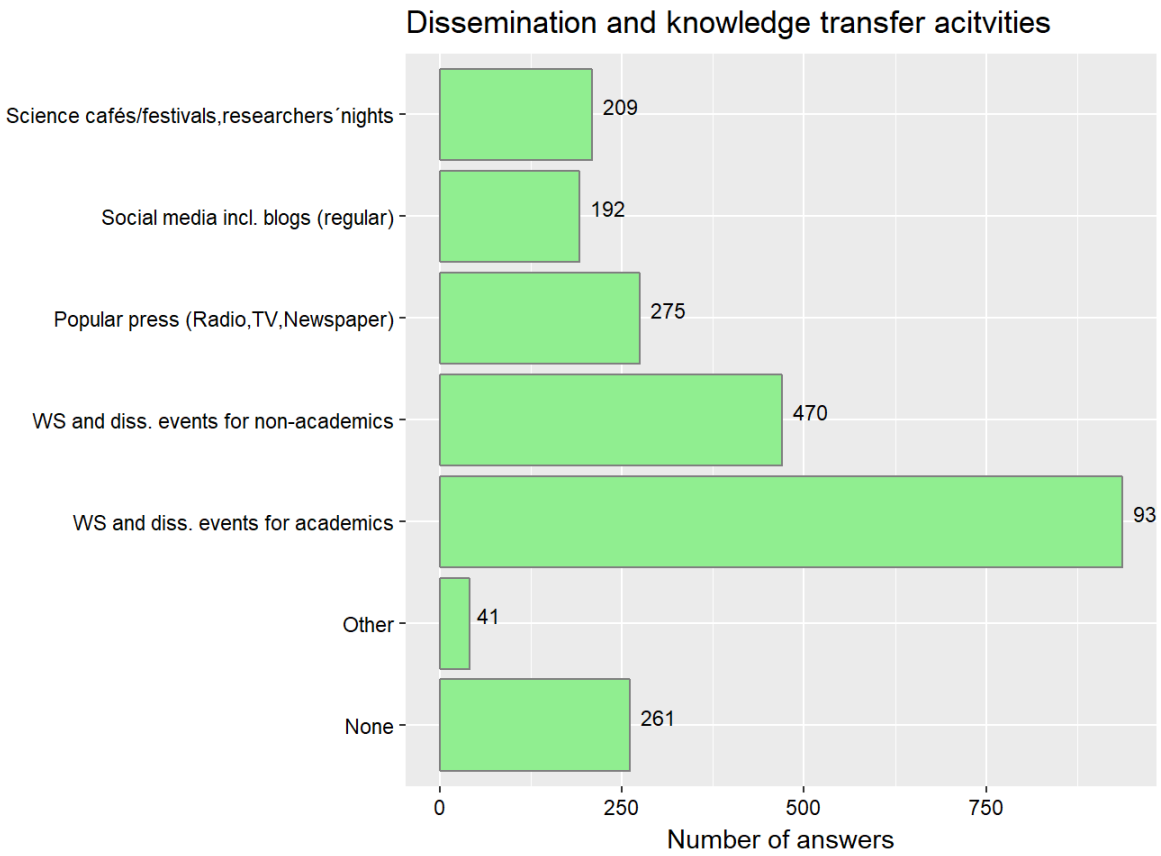


Figure 12: Dissemination and knowledge transfer activities

Workshops and dissemination events for academic audiences (v_215)

Workshops and dissemination events for academic audiences

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	420	30.95	30.95	30.95
quoted	937	69.05	69.05	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.69 · σ=0.46

Workshops and dissemination events for non-academic audiences (v_216)

Workshops and dissemination events for non-academic audiences (e.g. schools, teachers)

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	887	65.36	65.36	65.36
quoted	470	34.64	34.64	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.35 · σ=0.48

Popular press (v_217)

Popular press (Radio, TV, Newspapers or Magazines)

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1082	79.73	79.73	79.73
quoted	275	20.27	20.27	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.20 · σ=0.40

Social media (v_218)

Social media including blogs for my professional work (on a regular basis)

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1165	85.85	85.85	85.85
quoted	192	14.15	14.15	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.14 · σ=0.35

Science cafés, science festivals, researchers´ nights (v_219)

Science cafés, science festivals, researchers'' nights

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1148	84.60	84.60	84.60
quoted	209	15.40	15.40	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.15 · σ=0.36

Other (v_213)

Other, please specify:

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1316	96.98	96.98	96.98
quoted	41	3.02	3.02	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.03 · σ=0.17

None of the above (v_220)

None of the above

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1096	80.77	80.77	80.77
quoted	261	19.23	19.23	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.19 · σ=0.39

Publishing under open access schemes (v_199 to v_201, v_210, v_211)

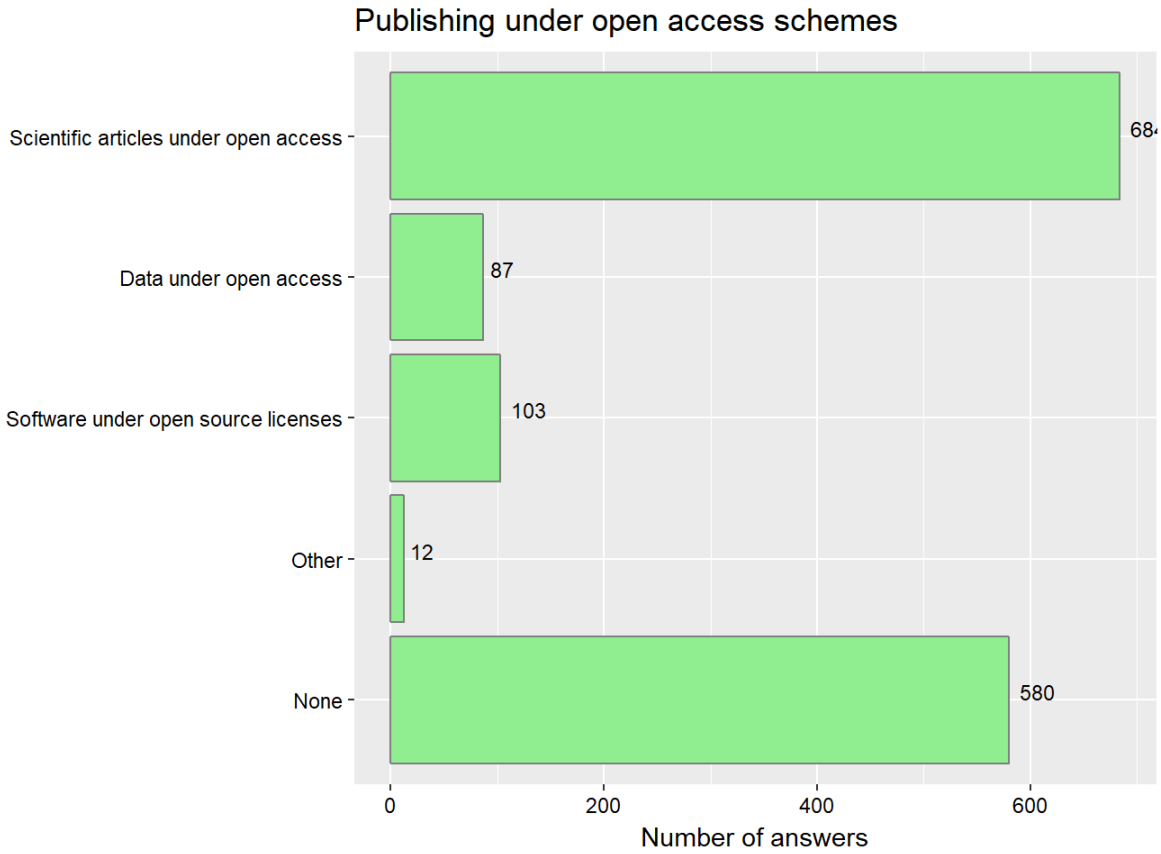


Figure 13: Open access publishing

Software under open source licenses (v_199)

Yes, software under Open Source licenses

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1254	92.41	92.41	92.41
quoted	103	7.59	7.59	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.08 · σ=0.26

Data under open access (v_200)

Yes, data under open access

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1270	93.59	93.59	93.59
quoted	87	6.41	6.41	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.06 · σ=0.25

Scientific articles under open access (v_201)

Yes, scientific articles under open access

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	673	49.59	49.59	49.59
quoted	684	50.41	50.41	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.50 · σ=0.50

Other (v_210)

Other, please specify:

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1345	99.12	99.12	99.12
quoted	12	0.88	0.88	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.01 · σ=0.09

None (v_221)

None of the above

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	777	57.26	57.26	57.26
quoted	580	42.74	42.74	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.43 · σ=0.49

Member of a minority ethnic group (v_100)

26. Do you consider yourself to be a member of a minority ethnic group?

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes	110	8.11	8.17	8.17
No	1237	91.16	91.83	100.00
missing	10	0.74		

total N=1357 · valid N=1347 · x̄=1.92 · σ=0.27

Disability or chronic illness (v_101)

27. Do you consider yourself to have a disability or chronic illness?

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes	61	4.50	4.56	4.56
No	1278	94.18	95.44	100.00
missing	18	1.33		

total N=1357 · valid N=1339 · x̄=1.95 · σ=0.21

Living in a partnership (v_102)

28. Do you live with a partner (marriage, cohabitation, civil partnership, etc.)?

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes	941	69.34	70.07	70.07
No	402	29.62	29.93	100.00
missing	14	1.03		

total N=1357 · valid N=1343 · $\bar{x}$=1.30 · σ=0.46

Gender stereotypes beliefs (v_195 to v_198)

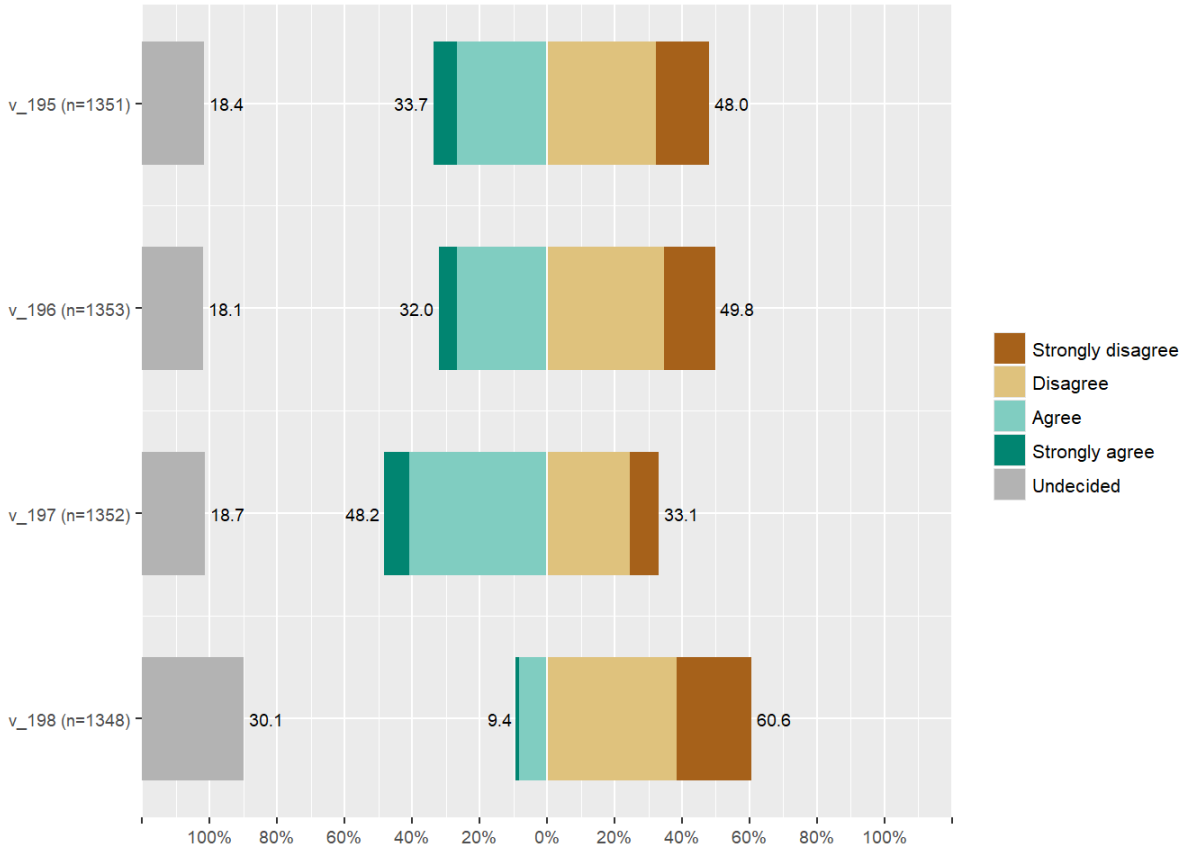


Figure 14: Gender stereotype beliefs

Women and men have strengths in different areas (v_195)

Women and men have their respective strengths in different areas

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	213	15.70	15.77	15.77
Disagree	435	32.06	32.20	47.96
Undecided	248	18.28	18.36	66.32
Agree	359	26.46	26.57	92.89
Strongly agree	96	7.07	7.11	100.00
missing	6	0.44		

total N=1357 · valid N=1351 · $\bar{x}$=2.77 · σ=1.20

Women and men generally have different ways of contributing to a team task (v_196)

Women and men generally have different ways of contributing to a team task

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	204	15.03	15.08	15.08
Disagree	470	34.64	34.74	49.82
Undecided	245	18.05	18.11	67.92
Agree	363	26.75	26.83	94.75
Strongly agree	71	5.23	5.25	100.00
missing	4	0.29		

total N=1357 · valid N=1353 · $\bar{x}$=2.72 · σ=1.16

Women and men generally have different communication styles (v_197)

Women and men generally have different communication styles

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	118	8.70	8.73	8.73
Disagree	330	24.32	24.41	33.14
Undecided	253	18.64	18.71	51.85
Agree	551	40.60	40.75	92.60
Strongly agree	100	7.37	7.40	100.00
missing	5	0.37		

total N=1357 · valid N=1352 · $\bar{x}$=3.14 · σ=1.13

Many of the widespread ideas about how women and men differ are accurate (v_198)

Many of the widespread ideas about how women and men differ are accurate

value	*N*	*raw %*	*valid %*	*cumulative %*
Strongly disagree	299	22.03	22.18	22.18
Disagree	517	38.10	38.35	60.53
Undecided	406	29.92	30.12	90.65
Agree	113	8.33	8.38	99.04
Strongly agree	13	0.96	0.96	100.00
missing	9	0.66		

total N=1357 · valid N=1348 · $\bar{x}$=2.28 · σ=0.93

Graphical summary gender stereotypes beliefs

Care responsibilities (v_132, v_119 to v_122)

In total, 727 (54%) state that they did have or have not any care responsibilities. Current care responsibilities are distributed as follows: for children under 16 years there are 487 (36%) positive answers and for dependent adults 58 (4%). 119 (9%) had care responsibilities for children under 16 years in the past, 45 (3%) state that they had care responsibilities for dependent adults in the past.

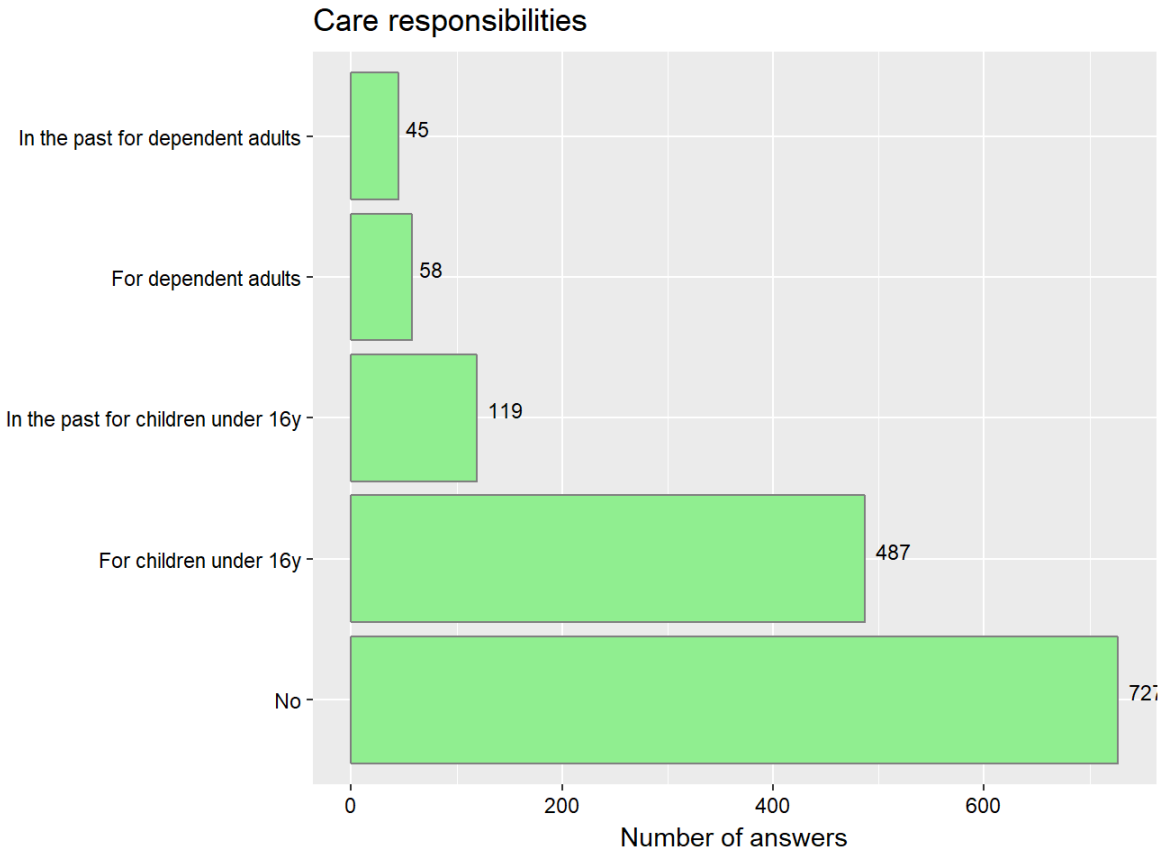


Figure 15: Care responsibilities - all items

Children under 16y (v_132)

Yes, for children under 16 years

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	870	64.11	64.11	64.11
quoted	487	35.89	35.89	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.36 · σ=0.48

In the past children under 16y (v_119)

Yes, in the past for children under 16 years

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1238	91.23	91.23	91.23
quoted	119	8.77	8.77	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.09 · σ=0.28

For dependent adults (v_120)

Yes, for dependent adults

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1299	95.73	95.73	95.73
quoted	58	4.27	4.27	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.04 · σ=0.20

In the past for dependent adults (v_121)

Yes, in the past for dependent adults

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1312	96.68	96.68	96.68
quoted	45	3.32	3.32	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.03 · σ=0.18

No care responsibilities (v_122)

No

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	630	46.43	46.43	46.43
quoted	727	53.57	53.57	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.54 · σ=0.50

Care responsibilities affecting the work (extent) (v_123)

30a. To which extent do/did these care responsibilities affect your work?

value	*N*	*raw %*	*valid %*	*cumulative %*
Not at all	113	8.33	17.77	17.77
To some extent	378	27.86	59.43	77.20
To a large extent	145	10.69	22.80	100.00
missing	721	53.13		

total N=1357 · valid N=636 · x̄=2.05 · σ=0.64

Care responsibilities affecting the work (extent) and work hours contracted for (v_123 x v_81)

30a. To which extent do/did these care responsibilities affect your work?	*16 How many hours a week are you contracted for?*			***Total***
	Less than 20 hours/ week (part time)	20 up to 35 hours/week (part time)	More than 35 hours (full time)	
Not at all	15 23.4%	15 21.7%	83 16.7%	113 17.9%
To some extent	28 43.8%	39 56.5%	307 61.6%	374 59.3%
To a large extent	21 32.8%	15 21.7%	108 21.7%	144 22.8%
Total	64 100%	69 100%	498 100%	631 100%

χ^2=8.366 · df=4 · Cramer's V=0.081 · p=0.079

Care responsibilities affecting the work (extent) and gender (v_123 x v_7R)

30a. To which extent do/did these care responsibilities affect your work?	*5. I am (gender)*		***Total***
	A woman	A man	

Not at all	55 18.9%	58 16.8%	113 17.8%
To some extent	160 55%	218 63.2%	378 59.4%
To a large extent	76 26.1%	69 20%	145 22.8%
Total	291 100%	345 100%	636 100%
			χ^2=4.767 · df=2 · Cramer's V=0.087 · p=0.092

Care responsibilities affecting the work (ways)(v_124 to v_129, v_133 to v_137)

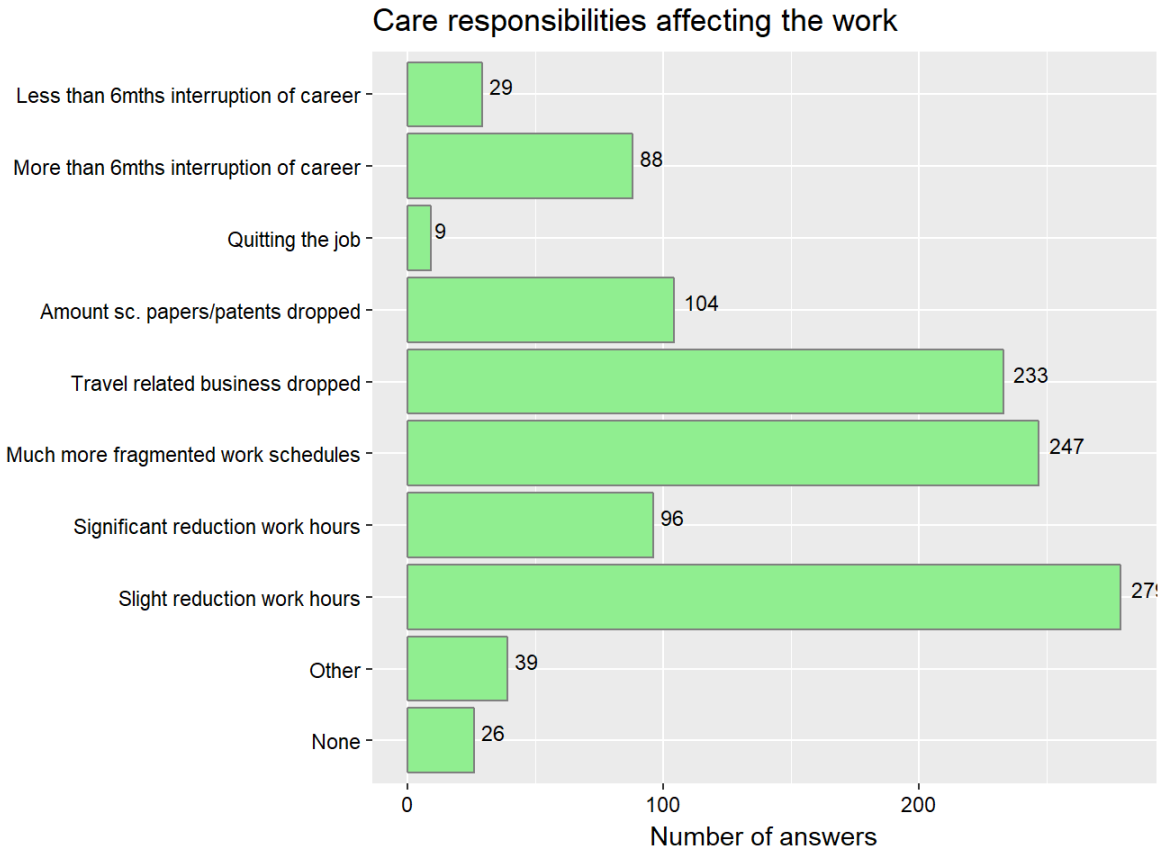


Figure 16: Care responsibilities affecting work - all items

Slight reduction work hours (v_129)

Slight reduction of my working hours

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1078	79.44	79.44	79.44
quoted	279	20.56	20.56	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.21 · σ=0.40

Significant reduction work hours (v_124)

Significant reduction of my working hours

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1261	92.93	92.93	92.93
quoted	96	7.07	7.07	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.07 · σ=0.26

Much more fragmented work schedules (v_125)

My work schedules got much more fragmented

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1110	81.80	81.80	81.80
quoted	247	18.20	18.20	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.18 · σ=0.39

Travel related business dropped (v_126)

Participation in travel related businesses (such as congresses) dropped

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1124	82.83	82.83	82.83
quoted	233	17.17	17.17	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.17 · σ=0.38

Amount of scientific papers/patents dropped (v_127)

The amount of my scientific papers/ patents dropped

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1253	92.34	92.34	92.34
quoted	104	7.66	7.66	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.08 · σ=0.27

Quitting the job (v_128)

I quit my job

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1348	99.34	99.34	99.34
quoted	9	0.66	0.66	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.01 · σ=0.08

More than 6 months interruption of career (v_133)

More than 6 months of interruption of my professional career (excluding maternity /paternity/ parental leave)

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1269	93.52	93.52	93.52
quoted	88	6.48	6.48	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.06 · σ=0.25

Less than 6 months interruption of career (v_134)

Less than 6 months of interruption of my professional career (excluding maternity/ paternity/ parental leave)

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1328	97.86	97.86	97.86
quoted	29	2.14	2.14	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.02 · σ=0.14

Other (v_135)

Other, please specify:

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1318	97.13	97.13	97.13
quoted	39	2.87	2.87	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · x̄=0.03 · σ=0.17

None (v_137)

None of the above

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	1331	98.08	98.08	98.08
quoted	26	1.92	1.92	100.00
missing	0	0.00		

total N=1357 · valid N=1357 · $\bar{x}$=0.02 · σ=0.14

Peer reviewed articles (v_130)

While 21% of the team members have no peer reviewed articles published since 2013, 36% state 1 to 4 and 24% have 10 or more peer reviewed publications. Note that these performance measures are self-reported and different from the bibliometric performance data compiled from the Web of Science.

31. How many peer reviewed articles have you published since 1st January 2013?

value	*N*	*raw %*	*valid %*	*cumulative %*
0	284	20.93	21.16	21.16
1-4	484	35.67	36.07	57.23
5-9	243	17.91	18.11	75.34
10 - 19	164	12.09	12.22	87.56
20 - 39	106	7.81	7.90	95.45
40 or more	61	4.50	4.55	100.00
missing	15	1.11		

total N=1357 · valid N=1342 · $\bar{x}$=2.63 · σ=1.39

Peer reviewed articles and gender (v_130 x v_7R)

Largest differences in terms of self-reported publication counts by gender are observed for high output researchers: there are 74% of men that have 40+ publications compared to 26% of women. In comparison, the distribution is more balanced between men and women at the early career stages: 49% of women have 0 publications versus 51% of men.

31. How many peer reviewed articles have you published since 1st January 2013?	5. *I am (gender)*		***Total***
	A woman	A man	
0	139 48.9% 24.3%	145 51.1% 18.8%	284 100% 21.2%
1-4	214 44.3% 37.5%	269 55.7% 34.9%	483 100% 36%
5-9	105 43.2% 18.4%	138 56.8% 17.9%	243 100% 18.1%
10 - 19	58 35.4% 10.2%	106 64.6% 13.8%	164 100% 12.2%
20 - 39	39 36.8% 6.8%	67 63.2% 8.7%	106 100% 7.9%
40 or more	16 26.2% 2.8%	45 73.8% 5.8%	61 100% 4.5%
Total	571 42.6% 100%	770 57.4% 100%	1341 100% 100%

χ^2=16.945 · df=5 · Cramer's V=0.112 · p=0.005

Patents (v_131)

While almost 89% have no European patents registered since 2013, 10% have 1 to 4 patents, about 1% have 5 or more patents. This reflects the low share of private industries in the survey participants, who typically tend to engage more in patents than in publications.

32. On how many European patents have you been named as an inventor since 1st January 2013 (including pending accepted applications)?

value	*N*	*raw %*	*valid %*	*cumulative %*
0	1191	87.77	88.55	88.55
1 - 4	134	9.87	9.96	98.51
5 - 9	13	0.96	0.97	99.48
10 - 19	2	0.15	0.15	99.63
20 - 39	4	0.29	0.30	99.93
40 or more	1	0.07	0.07	100.00
missing	12	0.88		

total N=1357 · valid N=1345 · $\bar{x}$=1.14 · σ=0.45

Patents and gender (v_131 x v_7R)

When taking gender into consideration, 93% of the women and about 86% of the men have no patent; 7% of the women and 12% of the men have one to four patents. No woman has 10 or more patents.

32. On how many European patents have you been named as aninventor since 1st January 2013 (including pending accepted applications)?	5. *I am (gender)*		***Total***
	A woman	A man	
0	529 44.5% 92.6%	661 55.5% 85.5%	1190 100% 88.5%
1 - 4	40 29.9% 7%	94 70.1% 12.2%	134 100% 10%
5 - 9	2 15.4% 0.4%	11 84.6% 1.4%	13 100% 1%
10 - 19	0 0% 0%	2 100% 0.3%	2 100% 0.1%
20 - 39	0 0% 0%	4 100% 0.5%	4 100% 0.3%
40 or more	0 0% 0%	1 100% 0.1%	1 100% 0.1%
Total	571 42.5% 100%	773 57.5% 100%	1344 100% 100%

χ^2=19.719 · df=5 · Cramer's V=0.121 · Fisher's p=0.001

Team Contact Questionnaire

The team contact questionnaire was answered by one person of the team.

Type of organisation (TC_OrgType)

Type of organisation

value	*N*	*raw %*	*valid %*	*cumulative %*
0	6	3.77	5.77	5.77
University	72	45.28	69.23	75.00
Public research center	15	9.43	14.42	89.42
Private sector / industry	5	3.14	4.81	94.23
Other, please specify:	6	3.77	5.77	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=1.47 · σ=1.28

Number of employees (TC_NumEmployees)

Number of employees

value	*N*	*raw %*	*valid %*	*cumulative %*
< 50	6	3.77	5.77	5.77
50 - 250	13	8.18	12.50	18.27
250 - 500	10	6.29	9.62	27.88
500 - 1000	6	3.77	5.77	33.65
> 1000	69	43.40	66.35	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=4.14 · σ=1.33

Founding year of the team (TC_FoundingYear)

"In which year was the current team leader officially appointed as team leader by your organisation?"

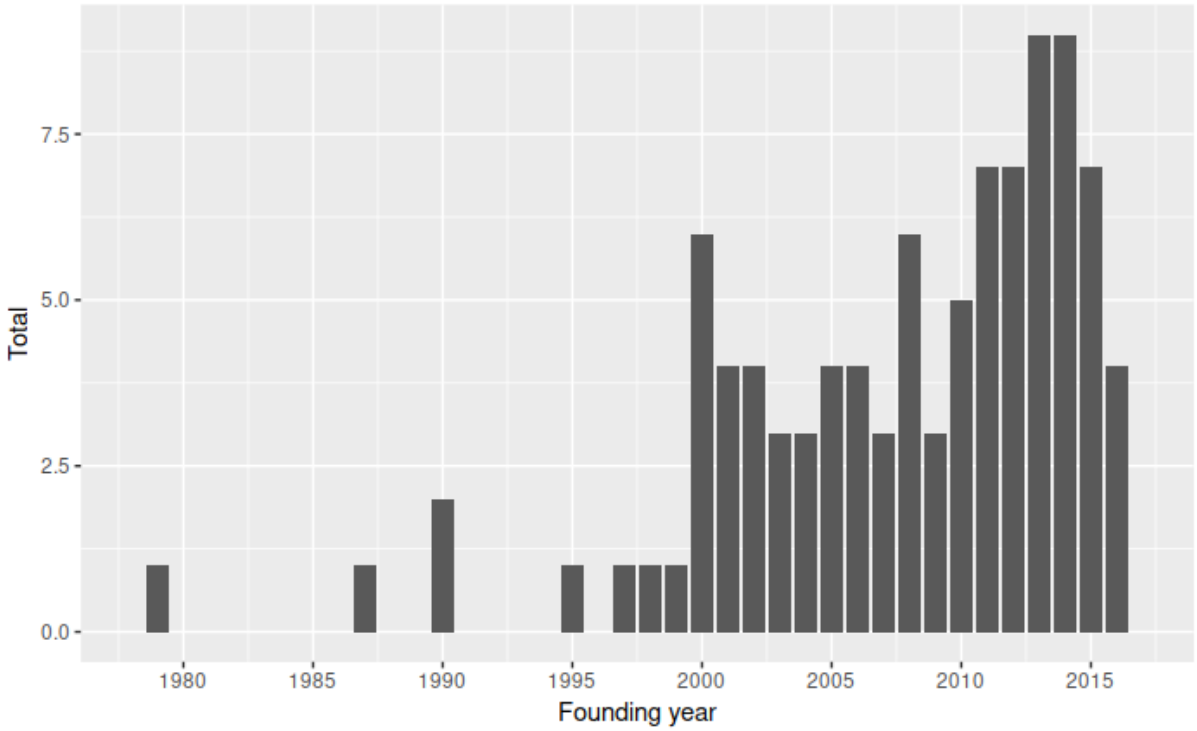


Figure 17: Founding year or the research group

Working methodology (TC_Method)

Asked about a particular formal working methodology such as Agile methods, TRIZ, Design Thinking used, most teams do not use any specific working methodology.

Working methodology

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes, please specify:	18	11.32	17.31	17.31
No	81	50.94	77.88	95.19
I don't know	5	3.14	4.81	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=1.88 · σ=0.46

Colocation (TC_Colocation)

Do team members have the opportunity to interact face to face? Asked this question, 85% of the teams share the same physical location (lab, office, building) in walking distance to each other.

Colocation

value	*N*	*raw %*	*valid %*	*cumulative %*
Most team members share the same physical location (lab, office, building) in walking distance to each other	88	55.35	84.62	84.62
Some team members are within walking distance, others are located further away	11	6.92	10.58	95.19
Most team members are working in different locations; face-to-face meetings require travel arrangements	5	3.14	4.81	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=1.20 · σ=0.51

Gender Equality Plan (TC_GEP)

Does your organization have a Gender Equality Plan? About 60% of the teams are working in organizations with a Gender Equality Plan, while 20% do not.

GEP

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes	62	38.99	59.62	59.62
No	21	13.21	20.19	79.81
I don't know	21	13.21	20.19	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=1.61 · σ=0.81

Gender dimension in research (TC_GenderDim)

For 57% there is no gender dimension in research, while for 30% teams there is a gender dimension applied in research.

Does your research integrate a "gender dimension"?

value	*N*	*raw %*	*valid %*	*cumulative %*
Yes, please specify:	31	19.50	29.81	29.81
No	59	37.11	56.73	86.54
I don't know	14	8.81	13.46	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=1.84 · σ=0.64

Is your team involved in any Responsible Research & Innovation (RRI) activities? If so, which?

Most of the teams are engaged in Science Education (57), followed by RRI activities in Open Access (41) and Public Engagement (36). The least chosen RRI activity involves the concept of Governance (11).

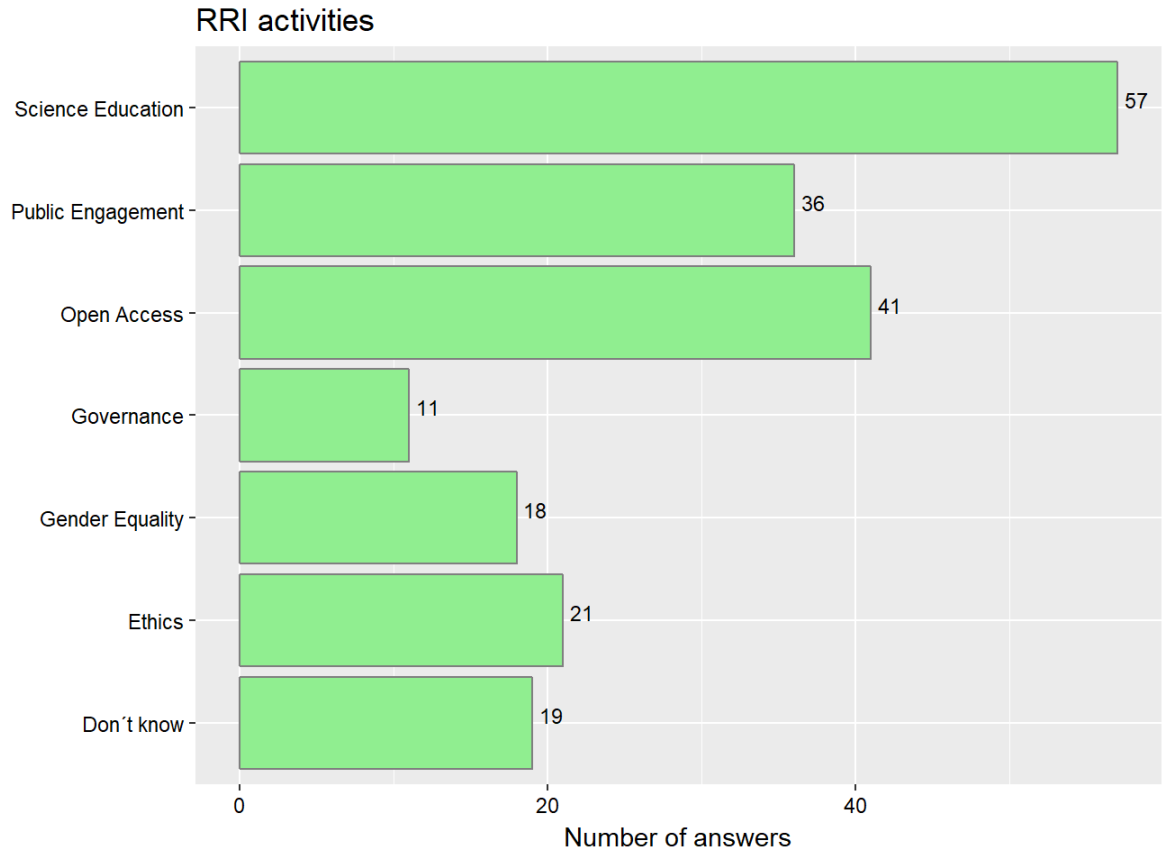


Figure 18: RRI - activities - all items

RRI Ethics (TC_RRI_Ethics)

Ethics

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	83	52.20	79.81	79.81
quoted	21	13.21	20.19	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=0.20 · σ=0.40

RRI Gender Equality (TC_RRI_Gender)

Gender Equality

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	86	54.09	82.69	82.69
quoted	18	11.32	17.31	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=0.17 · σ=0.38

RRI Governance (TC_RRI_Gov)

Governance

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	93	58.49	89.42	89.42
quoted	11	6.92	10.58	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=0.11 · σ=0.31

RRI Open Access (TC_RRI_OA)

Open Access

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	63	39.62	60.58	60.58
quoted	41	25.79	39.42	100.00
missing	55	34.59		

total N=159 · valid N=104 · $\bar{x}$=0.39 · σ=0.49

RRI Public Engagement (TC_RRI_Pub)

Public Engagement

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	68	42.77	65.38	65.38
quoted	36	22.64	34.62	100.00
missing	55	34.59		

total N=159 · valid N=104 · x̄=0.35 · σ=0.48

RRI Science Education (TC_RRI_SciEdu)

Science Education

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	47	29.56	45.19	45.19
quoted	57	35.85	54.81	100.00
missing	55	34.59		

total N=159 · valid N=104 · x̄=0.55 · σ=0.50

Do not know about RRI (TC_RRI_DKnow)

I don't know

value	*N*	*raw %*	*valid %*	*cumulative %*
not quoted	85	53.46	81.73	81.73
quoted	19	11.95	18.27	100.00
missing	55	34.59		

total N=159 · valid N=104 · x̄=0.18 · σ=0.39