Using gender equality indicators to support gender mainstreaming work at the Department of Information Technology

Project report

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Background

One of the target areas of Uppsala University’s Plan for Gender Mainstreaming for 2020-20221 is the monitoring of internal resources allocation¹. Two new gender equality indicators have been developed to analyse the distribution of research resources and research funding within the university from a gender perspective and this is also one of the key actions in Teknat’s latest equal opportunities action plan². It has also been shown before that gender statistics can be a powerful tool to raise organizational awareness of gender issues³.

Aims

Building on this background, this project aimed to investigate how Uppsala University’s new gender equality indicators can be used to monitor the gender distribution of research resources and funding at the Department of Information Technology and how they can be used in a long-term perspective to improve gender mainstreaming work at the Department.

Specific objectives are:

1) To investigate how gender equality indicators in GLIS can be used to monitor distribution of research resources and research funding

2) To map the distribution of research resources and funding and produce gender statistics

3) To explore how the gender equality indicators can be used as tools to support gender mainstreaming work at the Department

¹ Plan för jämställdhetsintegrering 2020-2022, Uppsala University.
² Åtgärdsplan för Lika villkorsarbete 2019 på fakultetsnivå. Teknat, Uppsala University.
³ The FESTA handbook of organizational change. http://www.festa-europa.eu/
Project’s implementation and results

We started the project with a kick-off meeting in October 2020, bringing together a working group consisting of the Equal Opportunities Officer Ginevra Castellano, the Head of Research Gunilla Kreiss, the Head of Department Lina von Sydow, Deputy Head of Department Robin Strand, and Economist Wiola Öhlund. Nina Almgren and Karin Stensjö also participated in the meeting in an advisory role, and so did Louise Kennerberg, who explained to the project’s participants how the gender equality indicators available in GLIS are calculated. The project's kick-off meeting’s outcome was a concrete workplan for the project. The project's proposal has been reviewed by the Etikprövningsmyndigheten, whose decision was that the proposal does not require full ethical vetting and they do not have any ethical objections to the research project.

Gender statistics

In order to produce gender statistics, we conducted the following actions:

1) Find out how accounting and coding work at the Department and how gender equality indicators can be extracted from GLIS
2) Find out if the indicators can also be connected to other data systems other than GLIS
3) Map the distribution of staff’s research time
4) Map the distribution of staff’s research grants
5) Produce gender statistics reflecting the distribution of research time and grants and investigate whether imbalances exist in the distribution between the two legal genders

Ginevra Castellano has worked closely with Wiola Öhlund on all points above and received support by PhD student Natalia Calvo-Barajas for the calculation of the gender statistics. The following gender disaggregated data have been extracted from GLIS from year 2011 to year 2021 for different academic positions (assistant professors, associate professors, recruited professors and promoted professors):

- % of total time spent on research
- % of research time spent on “Research resources, direct government funding” (RRDGF)-funded research

From the data above, and also from other accounting systems used at the Department (i.e., Primula, Reindance), we also calculated the following data disaggregated by gender, from year 2011 to year 2021, for different academic positions (assistant professors, associate professors, and promoted professors):

- % of total time spent on RRDGF research
- % of total time spent on externally funded research

Average number of PhD students funded by RRDGF
Results

Due to the fact that samples cannot be assumed to be independent, since the same member of staff may contribute to the aggregated percentage of time spent in the analysed activities in more than one year, we performed the non-parametric Mann-Whitney U test to compare the indicators above between the legal genders from year 2011 to year 2021 for different academic positions (assistant professors, associate professors, recruited professors and promoted professors).

Below we report the results, first at the Department level, and then at the Division level, whenever possible (some Divisions have not employed any female staff between 2011 and 2021, or for too few years in order for a statistical analysis to be performed). We also do not report results where one legal gender has two or less members of staff in any academic position over the whole period 2011-2021, our aim being to report results on a group level. p values smaller than 0.05 indicate statistical significance. The p values are not corrected for multiple tests.

For readability purposes, statistically significant results are surrounded by a red box.

**IT Department - Promoted Professors**

![Graph showing total research by Promoted Professors - All IT Dept.]

- Avg females: 81.6 %
- Avg males: 57.3 %
- P < 0.001
RRDGF Research Funding out of Total Research
Promoted Professors - All IT Dept.

Avg females: 78 %
Avg males: 53.7 %
P < 0.001

External Funding
Promoted Professors - All IT Dept.

Avg females: 13.8 %
Avg males: 24.2 %
P < 0.05
RRDGF Research out of Total Time Promoted Professors - All IT Dept.

Avg females: 65.1 %
Avg males: 30.8 %
P < 0.001

Av. N. of PhD Students funded by RRDGF Promoted Professors - All IT Dept.

(PhD students with FFF funding > 65%)

Avg females: 0.7
Avg males: 0.31
P < 0.05
In summary, the results above show that for the promoted professors:

- The total research and RRDGF research are *significantly* higher for females than males
- The external research is *significantly* higher for males
- The RRDGF-funded PhD students are *significantly* higher for females

**IT Department - Associate Professors**

![Graphs showing research and funding comparisons between females and males](image_url)
In summary, we found that, for associate professors at the IT Department:

- The total and external research are *significantly* higher for females
- The RRDGF out of total research is similar for females and males
- The RRDGF funded PhD students are *significantly* higher for females

**IT Department - Assistant Professors**

Avg females: 78.9%
Avg males: 70.5%
P > 0.05

Avg females: 56.1%
Avg males: 68.6%
P > 0.05
In summary, we found that, for assistant professors at the IT Department:

- The total and the external research is higher for females than males
- The RRDGF is higher for males than females
Summary IT Department

Below we report a summary of the results at the IT Department.

- Promoted professors
  - The RRDGF out of total research and the RRDGF funded PhD students are significantly higher for females than males

- Associate professors
  - The RRDGF out of total research is similar for females and males
  - The RRDGF funded PhD students is significantly higher for females than males

- Assistant professors
  - RRDGF out of total research is higher for males than females

Vi2 Division - promoted professors

![Graphs showing data comparison between females and males for total research, external funding, RRDGF research funding out of total research, and average number of PhD students funded by RRDGF promoted professors in Vi2 division.]

Avg females: 84.6%
Avg males: 55.5%
P < 0.001

Avg females: 74.3%
Avg males: 63.4%
P > 0.05

Avg females: 18.5%
Avg males: 17.6%
P > 0.05

Avg females: 64.2%
Avg males: 35.3%
P < 0.01

Avg females: 0.77
Avg males: 0.5
P > 0.05
Below we summarise the results for the Vi2 Division:

- **Promoted professors**
  - The total research and RRDGF out of total time are *significantly* higher for **females**
  - The RRDGF out of total research is higher for **females**

- **Associate professors**
  - The total research and external research are *significantly* higher for **females**
  - The RRDGF funded PhD students are *significantly* higher for **females**
  - The RRDGF out of total research is higher for **males** (trend)
TDB Division - promoted professors

TDB Division - Associate professors

Avg females: 62.6%
Avg males: 37.6%
P < 0.001

Avg females: 68.1%
Avg males: 67.6%
P > 0.05

Avg females: 43.4%
Avg males: 24.1%
P < 0.01

Avg females: 0.95
Avg males: 0.54
P < 0.05
Below we summarise the results for the TDB Division:

- Associate professors
  - The total research, RRDGF out of total time and RRDGF funded PhD students are significantly higher for females
  - The external funding is higher for females (trend)
  - The RRDGF out of total research is similar for males and females

Conclusion

In conclusion, the conducted statistical analyses show that gender differences exist and they are sometimes in favour of females and sometimes in favour of males. This analysis raises several questions of relevance to future gender mainstreaming work at the Department, for example:

1) **Which of the analysed gender statistics are more important to take into account when allocating funding in a fair way from a gender perspective?**

   This question does not have a straightforward answer. While RRDGF funding is an important indicator, it also seems important to take into account the proportion in which it is allocated compared to external research funding.

2) **Can we use these results to inform budgeting work at the Divisions? If so, how?**

3) **What differences do we consider acceptable?**

We hope this report can start discussions in the management groups of each Division and the Department as a whole. These results will inform future Department’s operational plans for equal opportunities by identifying target areas based on the project’s findings.

For the sake of completeness, the Appendix at the end of this document includes data for the DoCS, Syscon and CSD Divisions, even if it does not include any analysis of gender differences (no female staff at assistant, associate nor professor level employed between 2011 and 2021 at Syscon and CSD; two or less members of female staff at DoCS over the whole period 2011-2021).
Appendix

DoCS Division - Recruited professors and promoted professors

![Graph 1: Total Research Recruited Professors - DoCS](image1)

![Graph 2: Total Research Promoted Professors - DoCS](image2)

![Graph 3: RRDGF Research Funding out of Total Research Recruited Professors - DoCS](image3)

![Graph 4: RRDGF Research Funding out of Total Research Promoted Professors - DoCS](image4)

![Graph 5: External Funding Recruited Professors - DoCS](image5)

![Graph 6: External Funding Promoted Professors - DoCS](image6)
Syscon Division - Recruited professors and promoted professors
Syscon Division - Associate professors

Syscon Division - Assistant professors
CSD Division - Recruited professors and promoted professors
CSD Division - Associate professors
CSD Division - Assistant professors

Conclusion

From the data in this appendix, we also note that gender may not be the only variable of interest. Others may include differences in resource allocation between recruited and promoted professors. While we have not specifically analysed differences in a quantitative way as we have done for gender, it appears that in some cases the promoted professors have a less secure situation when it comes to RRDGF funding, and there can be big fluctuations over the years. This could be worthed of further investigation in the future.