

Gender Balance among Staff in Irish Mathematical Sciences Departments, 2020–2025

FINTAN HEGARTY, RÓISÍN HILL, NIALL MADDEN AND PETER PHELAN

ABSTRACT. This article summarises the gender balance in staff cohorts in the mathematical sciences departments of several Irish higher education institutions, based on data collected as part of a project funded by the HEA’s Gender Equality Enhancement Fund. This can be used to provide sectoral averages to which departments can compare their own data; and so aid them in preparing applications for Athena Swan Awards. In addition, data are presented for research, professional and academic staff, with comparisons between 2020 and 2025. We observe that, in the five-year period considered, there has been a significant increase in the proportion of women holding research and senior academic posts. However, we also observe that the proportion of academic posts held by women has decreased.

1. INTRODUCTION

This article presents aggregated data for the number and proportion of women and men employed in mathematical sciences departments in a selection of Irish higher education institutions (HEIs). Such data is useful for a variety of purposes, but especially for benchmarking in Athena Swan Award applications.

1.1. Athena Swan. The Athena Swan programme was launched in the UK in 2005 as an accreditation framework for institutions to assess their own progress and plans towards supporting gender equality in higher education. It was originally intended to advance the careers of academic women in science, technology, engineering, mathematics, and medicine (STEMM): initially, “SWAN” abbreviated “Scientific Women’s Academic Network”. Although the brand remains, the programme now has a much broader remit. Since 2015, it includes non-STEMM departments and supports all categories of staff and students.

In 2015, the programme was also expanded to include Ireland, accrediting awards for institutions and departments¹, and managed by Athena Swan Ireland.

Athena Swan is primarily associated with its awards. An award is made to an institution or department that makes an application that, in the assessment of a panel, meets certain criteria. To achieve a Bronze Award, the fundamental criteria are as follows:

- (a) The application provides accurate and detailed quantitative and qualitative data on the unit’s organisation, culture, and gender balance.

2020 *Mathematics Subject Classification.* 00A99.

Key words and phrases. Gender Balance, Athena Swan.

Received on 11-03-2026, revised on 26-05-2026.

DOI: 10.33232/BIMS.0097.23.29.

This research has been supported by the Higher Education Authority’s Gender Equality Enhancement Fund.

¹We follow Athena Swan terminology, and refer to such units as “departments” even if they are officially titled “Schools”.

- (b) The application demonstrates that the unit has collected and analysed that data, and reflected on the results. The process specifically requires that data be compared with relevant external benchmarking data.
- (c) The report contains an Action Plan that is deemed to be sufficiently robust so that progress can be made on any issues raised.

Silver Awards recognise that the unit in question has provided evidence that its Action Plan has delivered significant results. A Gold Award is given to those institutions and departments that demonstrate a record of achievement in gender equality over a long period, and support others in achieving their goals.

Since applications are required to compare their data with the norms for that sector, this article provides such data for mathematical sciences departments in Irish HEIs. To date there has been no reliable set of data for the mathematical sciences sector in Ireland. However, data are available that provide an insight into the gender balance in Higher Education in Ireland: a 2022 report from the Higher Education Authority (HEA) states that, in 2020, 46% of both research and academic posts were held by women [1], and an interactive dashboard from the HEA shows that in 2024 in STEMM departments, 48.9% of research posts and 40.1% of academic posts were held by women [2]. As shown in the remainder of this article, the balance in the mathematical sciences is somewhat different.

1.2. Institutions that contributed data to this report. The aggregated data we present here are largely based on data collected for departments' own Athena Swan applications. The following are the departments (and their representatives) that contributed to this work, and provided data from their Athena Swan awards.

1. The School of Mathematical Sciences, Dublin City University (Eabhna Ní Fhlóinn and Ronan Egan). Athena Swan Bronze Award (2022).
2. The Department of Mathematics and Statistics, Maynooth University (Niamh Cahill and David Malone). Athena Swan Bronze Award (2023).
3. The School of Mathematics and Statistics, Technological University Dublin (Dana Mackey). Athena Swan Bronze Award (2022).
4. The School of Mathematical Sciences, University College Cork (Tony Fitzgerald). Athena Swan Bronze Award (2022).
5. The School of Mathematics and Statistics, University College Dublin (Isabella Gollini and Pauline Mellon). Athena Swan Bronze Award (2023).
6. The School of Mathematical and Statistical Sciences, University of Galway (Niall Madden). Athena Swan Bronze Award (2021).
7. The Department of Mathematics and Statistics, University of Limerick (Alan Hegarty). Athena Swan Bronze Award (2015 and 2019) and Silver Award (2023).

2. METHODOLOGY

The data we focus on here compares current data from 2025 to data from 2020, which is the last year for which we have a complete set of data from all contributing institutions, and offers an appropriate time interval to show any effects of HEIs' gender equality initiatives.

The 2020 data was collected from each university's Athena Swan Awards applications, with more recent data collected from applications in preparation or from data provided directly by departments. All data is aggregated, so no institution or department is identified.

The data provided for each department included the number of women and men in Academic, Research, and Professional, Managerial and Support Service (PMSS)

cohorts; here the PMSS terminology follows that used by Athena Swan, and includes technical staff.

Furthermore, Academic staff numbers were further broken down into the career structure grades *Lecturer*, *Senior Lecturer*, and *Professor*. There is some variation between institutions in how these groups are named. Here we have followed the terminology used in the University of Galway as detailed in, for example, its 2024 Gender Pay Gap report [4]. We report on the *Lecturer Below the Bar*, *Lecturer Above the Bar* and *Lecturer* grades simply as “Lecturer”; the grade titled “Senior Lecturer/Associate Professor” is referred to as “Senior Lecturer”, while the *Professor In*, *Personal Professor*, and *Established Professor* roles are combined into a single “Professor” grade. We map career structures of other institutions onto that of the University of Galway by identifying the greatest overlap in pay scales. Specifically,

- grades reported as Assistant Professor, Lecturer Above the Bar, Lecturer Below the Bar, Teaching Assistant, Teaching Fellow, Non-Senior Lecturer, University Tutor, Hourly Paid Lecturer, and Assistant Lecturer, are all aggregated as *Lecturer*;
- grades reported as Associate Professor, Senior Lecturer I, Senior Lecturer II, and Senior Lecturer III, are combined under the heading *Senior Lecturer*; and
- grades reported as Established Professor, Full Professor and Personal Professor are aggregated as *Professor*.

3. RESULTS

3.1. All cohorts. In Table 1, we present the aggregated gender makeup of staff in mathematical sciences departments across our contributing HEIs in 2020 and 2025. The data are also visualised in Figure 1.

Category	2020		2025	
	F	M	F	M
Academic	58 (27%)	155 (73%)	56 (24%)	178 (76%)
PMSS	23 (77%)	7 (23%)	19 (66%)	10 (34%)
Research	6 (17%)	29 (83%)	22 (34%)	42 (66%)

TABLE 1. Staff cohorts, by gender, in 2020 and 2025

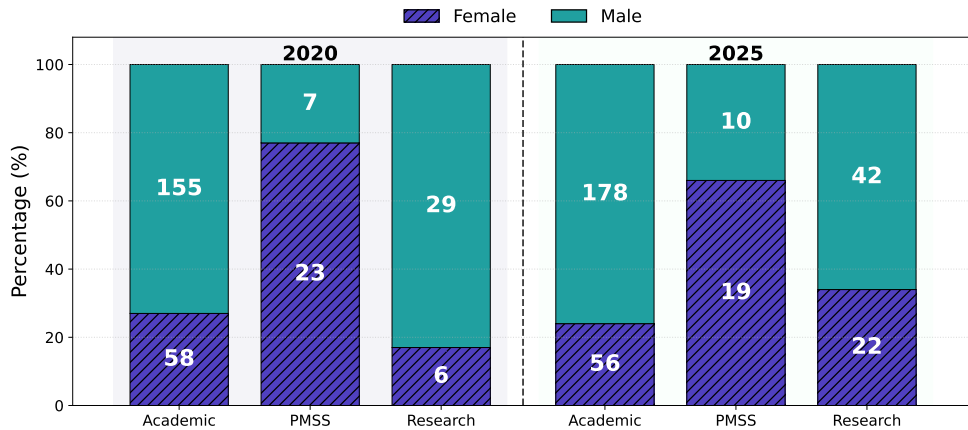


FIGURE 1. Staff cohorts, by gender, in 2020 and 2025

A number of observations can be made regarding this data. The over-representation of women in the PMSS category reflects broader trends that persist in Irish higher education institutions and disciplines [1]. The data suggest a slight shift towards equality, with the proportion of such posts being held by men increasing from 23% in 2020, to 34% in 2025. However, given the small number of individuals represented, this may not represent a definite trend.

Next we observe that there was a very large increase in the number of research staff employed in these departments: from 35 in 2020 to 64 in 2025, a jump of over 80%. Furthermore, the number of women in such posts grew from 6 (17% of the total) to 22 (34% of the total).

These trends, however, are not reflected among academic staff. Although the total number of people in academic posts grew by 10%, there was a slight reduction in the number of posts held by women. We investigate this more deeply in the next section.

3.2. Academic grades. As discussed in Section 2, we break down the Academic cohort into groups listed as Lecturer, Senior Lecturer, and Professor. The results are shown in Table 2, visualised in Figure 2.

Category	2020		2025	
	F	M	F	M
Lecturer	40 (29%)	98 (71%)	33 (24%)	105 (76%)
Senior Lecturer	15 (36%)	27 (64%)	13 (24%)	42 (76%)
Professor	3 (9%)	30 (91%)	10 (24%)	32 (76%)

TABLE 2. Academic staff grades by gender, 2020 and 2025

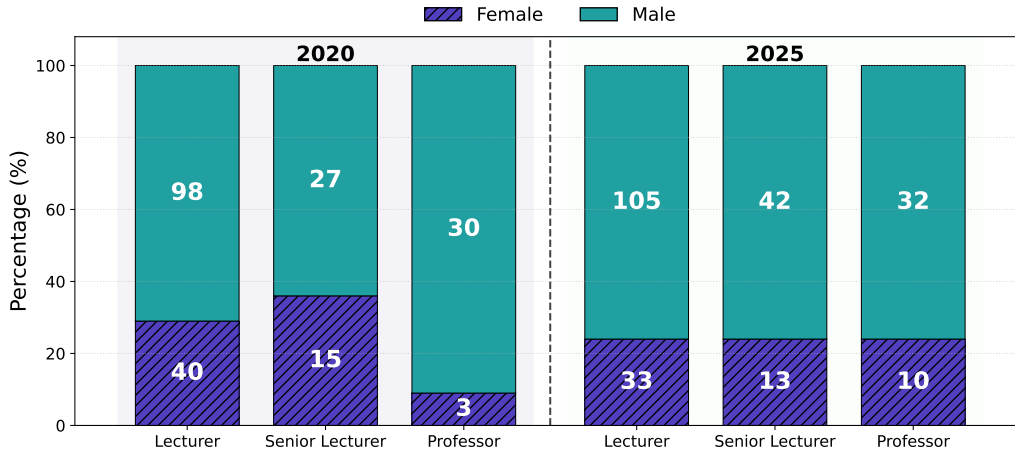


FIGURE 2. Academic staff grades by gender, 2020 and 2025 (by percentage)

Perhaps the most eye-catching statistic in Table 2 is that, in 2025, women hold 24% of posts in each of the reported grades. This masks some variation observed between institutions; however, to retain anonymity we don't present a breakdown by institution. Nonetheless, it supports the assertion that men and women may have equal opportunity in career progression, since the representation of each gender matches that of the overall cohort (as reported in Table 1).

It should be noted, however, that, at 24%, there are far fewer women proportionally in the mathematical sciences compared to the STEMM average (reported as 40.1% [2]).

Next we observe that, from 2020 to 2025, the number of female professors increased from 3 (and 9% of the total), to 10, suggesting an improvement on the “leaky pipeline” (a commonly used metaphor for the progressive loss of women from senior academic roles [3]). That is, more women are successfully progressing through the academic ranks and reaching professorial positions.

In an effort to make this clearer, in Figure 3 we present the same data as in Figure 2, but showing more clearly the absolute numbers in each grade. This makes the “leaky pipeline” of 2020 more obvious: there are far fewer women in Senior Lecturer roles than in Lecturer ones, and fewer again at Professorial level. In fact, in 2020, 69% of all women employed in academic posts were in Lecturer posts, compared to 26% and 5% in Senior Lecturer and Professor, respectively. In 2025, the corresponding percentages were 59%, 23% and 18%.

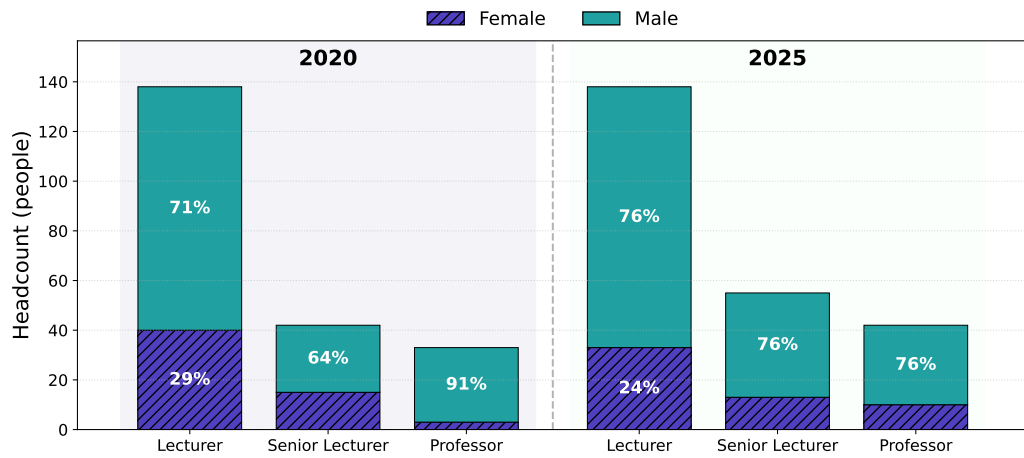


FIGURE 3. Academic staff grades by gender, 2020 and 2025 (by headcount)

Finally, we noted at the end of Section 3.1, that the total number of women in academic posts decreased slightly over the five year period, from 58 to 56. From the data presented in this section, we see that the increase of seven in the number of female Professors is more than offset by the decrease in the number of female Lecturers (also seven) and Senior Lecturers (two).

4. CONCLUSIONS

The data presented suggest that, while female academic staff have more equal opportunities for progression in 2025 compared to 2020, there are still issues regarding the recruitment of female academics.

We include here a small selection of action plan items listed across the HEIs’ most recently published Athena Swan applications:

- Appoint a female professor.
- Increase the number of female applicants for research and academic positions.
- Conduct analyses of recruitment and promotion trends for academic staff and of recruitment trends for research staff.
- Increase staff awareness of maternity and parental leave supports.
- Ensure students have at least one female lecturer (role model theory).
- Increase the number of PhD students in general, with at least 40% being female.

Since many of these actions are already in train, and may have impacted on the results here, it is possible that they are having a noticeable effect, especially on the number of senior female academics.

However, much remains to be done. It is speculative, but not unreasonable, to suggest that fewer women were recruited to Lecturer posts between 2020 and 2025, compared to the period before 2020. If such a trend exists, it is possible that the growing numbers of women in research roles may contribute to reversing it.

The recent increase in the number of women in research roles should not be taken for granted, however: internationally, there has been a decrease in the percentage of female doctoral students in mathematical fields, (for example, from 32.6% in 2018 to 29.4% in 2021 across OECD countries [5]). The same study claims that the corresponding percentage in Ireland increased from 19.2% to 36% across this time period.

In terms of policy, Ireland appears to be performing comparatively well – by international standards. For example, the Inspire project concluded that Ireland has “widespread uptake of systematic and comprehensive gender equality efforts, with well-developed, solid and comprehensive legal and policy frameworks” [6]; the SheFigures index shows Ireland is one of the top overall performers in the OECD in its progress towards gender equality in Research and Innovation and has the highest proportion of HEIs taking measures towards gender equality [5]; and the Irish Research Council Gender Strategy and Action Plan notes that “women are accessing research funding across all career stages at rates which compare very well, and in many cases exceed the rates for men” [7]. Research funding from the HEA is linked to an institution’s ability to reduce gender inequality [8], and the HEA Act 2022 requires each HEI to produce a gender equality statement [9].

4.1. Further work. While it seems that there has been some reduction in gender inequality in career progression in the mathematical sciences, the apparent imbalance in recruitment into academic roles needs to be monitored. Ireland’s policies, and the recent increase in the number of women in research posts, should lead to more gender balanced recruitment, but it may take some time for this to be realised.

Further, while the number of female academics has remained almost unchanged from 2020 to 2025, this, of course, ignores details around potential imbalances in retirements, resignations, and recruitment. Teasing this out further would be interesting and useful, but would depend on obtaining data related to career progression, recruitment, and applications for posts. Some institutions provide such data in Athena Swan applications, but not enough for a detailed study.

While our data from the seven institutions around the country should be largely representative of the country as a whole, factoring in the data of other institutions, especially the more recently formed technological universities, should give an even more comprehensive understanding of the national landscape.

Furthermore, the authors are keen to devise a framework for analysing participation rates in postgraduate and undergraduate mathematical sciences programmes, and welcomes input from the Irish mathematical community. We believe that such a study would be timely: the Society of Actuaries in Ireland has observed the number of women entering the actuarial profession has declined, proportionally, between 2006 and 2020, from approximately 50% to 30% [10]. The authors of that study link this to the decline in the proportion of female students obtaining the highest attainment grade in Leaving Certificate mathematics examinations, as further examined by the Society in 2025 [11]. It would be valuable to establish if there was a similar decline in the number of female students entering mathematical degree programmes.

REFERENCES

- [1] Higher Education Authority Centre of Excellence for Equality, Diversity and Inclusion. *Gender Equality in Irish Higher Education, 2016–2021*. 2022. https://hea.ie/assets/uploads/2022/03/Gender-Equality-in-Irish-Higher-Education-2016_2021.pdf. [Accessed: 09-03-2026]

- [2] Higher Education Authority. *Higher Education Institutional Staff Profiles by Sex and Gender 2024*, dashboard (2024). <https://hea.ie/policy/gender/statistics/higher-education-institutional-staff-profiles-by-sex-and-gender-2024/>
- [3] Resmini, Marina. *The ‘Leaky Pipeline’*. Chem. Eur. J (22), 3533-3534. 2016.
- [4] University of Galway. *Report on the Gender Pay Gap 2024* (2025). <https://www.universityofgalway.ie/media/equality/ovpedi/files/University-of-Galway-GPG-Report-2023-24-Final.pdf> [Accessed: 07-03-2026]
- [5] European Commission, Directorate-General for Research and Innovation. *She Figures 2024: Gender in Research and Innovation - Statistics and Indicators* (2025). https://op.europa.eu/publication/manifestation_identifier/PUB_KI0924569ENN
- [6] Caprile, M., Argudo, D., Pajares Sánchez, L., Beranek, S., Walker, D., Myers, E. S., Baisner Petersen, L., Hofman, A., Cankar, T., and Mihajlovic, J. *INSPIRE: Centre of Excellence on Inclusive Gender Equality in Research and Innovation: Creating Knowledge and Engaging in Collaborative Action* (2023) https://inspirequality.eu/sites/default/files/2023-12/INSPIRE_D2.2_4xCountryClusterReports_29EP23_submitted_0.pdf [Accessed: 09-03-2026]
- [7] Irish Research Council. *Review of Irish Research Council Gender Strategy and Action Plan* (2022). <https://research.ie/assets/uploads/2022/03/IRCGenderPlan-s.pdf> [Accessed: 09-03-2026]
- [8] Higher Education Authority. *Report of the Expert Group: 2nd HEA National Review of Gender Equality in Irish Higher Education Institutions* (2022). <https://hea.ie/policy/gender/hea-national-review-of-gender-equality-in-irish-higher-education-institutions/> [Accessed: 09-03-2026]
- [9] Higher Education Authority Act 2022, No. 31 of 2022, Section 62: *Equality Statement of Certain Designated Institutions of Higher Education (Ireland)*. (2022) <https://hea.ie/assets/uploads/2017/04/HEA-Act-2022.pdf> [Accessed: 09-03-2026]
- [10] Society of Actuaries in Ireland. *Understanding the gender gap at the highest performance level in Leaving Certificate Higher Level Mathematics*. (2023) <https://web.actuaries.ie/public/press-publications/papers/> [Accessed: 20-05-2026]
- [11] Society of Actuaries in Ireland. *Press Release on Gender Gap among high achieving students in Mathematics*. (2026) <https://web.actuaries.ie/news/26/01/press-release-gender-gap-among-high-achieving-students-mathematics>. [Accessed: 20-05-2026]

Fintan Hegarty is a graduate of University of Galway (B.Sc. in Financial Mathematics and Economics and Ph.D. in Mathematics). He has worked as a postdoctoral research fellow and is now a Lecturer in STEM Education through Irish with University of Galway.

Róisín Hill is a graduate of University of Galway (B.Sc. in Mathematical Science and Ph.D. in Applied Mathematics). She has worked as an Irish Research Council Postdoctoral Fellow at University of Limerick and as a Postdoctoral Researcher and Part-time Lecturer at University of Galway.

Niall Madden is a Senior Lecturer in Mathematics at University of Galway. His main area of research is numerical analysis and scientific computing. He has been involved in the Athena Swan process, and initiatives for gender equality, at national and local level for many years.

Peter Phelan is a graduate of Trinity College Dublin (B.A. in Mathematics) and University of Galway (Ph.D. in Mathematics). He is currently a research intern at the Walton Institute, South East Technological University.

(Hegarty, Hill, Madden) SCHOOL OF MATHEMATICAL AND STATISTICAL SCIENCES, UNIVERSITY OF GALWAY

(Phelan) WALTON INSTITUTE, SOUTH EAST TECHNOLOGICAL UNIVERSITY

E-mail address, F. Hegarty: fintan.hegarty@universityofgalway.ie

E-mail address, R. Hill: roisinhill@outlook.com

E-mail address, N. Madden: niall.madden@universityofgalway.ie

E-mail address, P. Phelan: peter.phelan@waltoninstitute.ie