



## Athena SWAN Bronze department award application

**Name of university:** University of York

**Department:** Mathematics

**Date of application:** 30<sup>th</sup> November 2013

**Date of university Bronze and/or Silver SWAN award:** Bronze Award, 2006; renewed in 2009 and 2011. Further renewal applied for in November 2013.

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### 1. Letter of endorsement from the head of department: maximum 500 words (currently 496)

It has been my intention for many years to promote the cause of women in mathematics and I have been able to do so while Head of Department (in Durham from 1996-98 and in York from 1999-2004, 2005-2007, 2011-2015).

For permanent academic staff, this has entailed working to remove barriers, for example for those women who have been appointed from research fellowships through to their current positions (for example Ruth Gregory and Anne Taormina, now Durham University professors, the latter now HoD-elect, and Vicky Gould and Reidun Twarock, now University of York Professors), and creating conditions under which strong female candidates are appointed and subsequently promoted. In 1999 there were two female lecturers in this department but now there are seven female permanent academic members of staff, including two professors and a senior lecturer, and 5 female RAs. I see these as steps in the right direction but not nearly enough. Permanent academic positions are relatively rare and filling each vacancy is a highly competitive, international, process that disadvantages women who may be less free to move than their male competitors. In the UK, this is particularly acute because the numbers of female PHD/RAs is also relatively low. Recognising that, we are working to increase the numbers of female applicants. We are reaching a time when key senior posts in the department will be taken by women - and this will be significant because of the clear role models they will then provide to students and staff.

For undergraduates, the ratio female to male is roughly 40:60 over recent years, but for postgraduates, female PhD students are relatively rare, female MSc students are less rare but still a minority (roughly 45:55), with most from overseas. The admissions processes are reviewed regularly and adjusted to ensure there are no hidden biases within our systems, unintentionally sending female-unfriendly messages to candidates. This requires vigilance and continual monitoring of the outcomes. Increasing the proportion of female PhD students and female RAs also generates role models available to students via small group teaching.

Concerning RA/RFs, most originate from outside the UK – as is also now the case with permanent staff of either gender. Looking over the history of the department, there have been sixteen short-term female members of staff, with eight now in permanent academic posts, including Canepa (SL, Brunel), J. Clegg (L, York Electronics), Dickinson (L, Maynooth), Doikou (R, Heriot-Watt), Dunning (SL, Kent), Gould (P, York), Twarock (P, York), J. Wilson (L, York); it was particularly pleasing that the University of York awarded Dusa McDuff, FRS (L York 1972-76) an honorary degree in 2000.

My aim is, within the constraints imposed by University rules and our immediate physical environment, together with my senior colleagues, to create sustainable structures that promote a collegial atmosphere that is welcoming to men and women, encouraging staff of either gender to fulfil their potential and, as far as possible, their ambitions, and to increase further the participation of women in mathematics at all levels.

## **2. The self-assessment process (1000 words, limit 1000)**

### **a) The self-assessment team (SAT):**

The eight members of the SAT reflect a variety of career stages and caring responsibilities.

**Dr Martina Balagovic, postdoctoral research fellow** from Croatia, joined the department after getting her PhD in America in 2011. She was never told that 'girls can't do maths'. Recently, however, she has been watching her friends struggle with multiple postdoctoral positions, the need to move often until very late in the career, the inability to solve the two body problem, the question of when to have children, and work-life balance.

**Professor Ed Corrigan F.R.S., Head of Department**, has around eleven years of experience as Head of Department at Durham and York, and four as Principal of Collingwood College, Durham. He has four children and five grandchildren. He has first-hand experience of the difficulties in the workplace faced by his female PhD students/postdocs and by both his daughters in their own fields (law and marine biology).

**Professor Victoria Gould** began her academic career at a time when it was widely believed 'girls can't do maths'. She has seen many positive changes, but believes there is still much to do in levelling the playing field. She has supervised female PhD students from several cultures, which has broadened her perspective on the range of difficulties women encounter as mathematicians. Victoria is also a member of the University's anti-harassment network.

**Dr Niall MacKay, Reader**, has held a wide range of administrative posts, including 2014 REF submission manager. Until 2010 Niall's partner was a full-time academic at another UK university, and commuted there weekly while their three young children attended the York Campus Nursery. He considers one of his more significant achievements to be his contribution to the introduction of a workplace nursery salary sacrifice scheme for its fees.

**Dr Alet Roux, Senior Lecturer**, joined York in 2007 after completing her PhD at York. Alet was heavily involved in the direction of an MSc programme until 2012. Having studied and worked in South Africa and the UK, she feels that her career would have developed differently (though not necessarily better) had she been male, rather than "just a girl". She fervently hopes that there will come a time when nobody would have to consider gender and class expectations as obstacles to developing their talents.

**Mrs Deborah Walton, Departmental Manager**, joined the University in 2011, initially working 3 days per week, and subsequently steadily increasing her hours. Married with one son at primary school, she was returning to work after a career break from the NHS. The University's flexible working arrangements have enabled her to balance work and home commitments.

**Dr Julie Wilson, lecturer**, began her career as a single parent with two young children. Initially working as a mathematician in Chemistry, a Department with a Gold Athena Swan, she now has a joint appointment between Mathematics and Chemistry and is resident in the York Centre for Complex Systems Analysis (YCCSA).

**Ms Rida-e-Zenab, Ph.D. student** is from Pakistan. In Rida's home society it is very difficult for women to get a scientific education and even harder to study Mathematics. On the other hand, childcare and domestic help is readily and affordably available.

Corrigan, Gould, Mackay and Roux have all been members of the University of York Athena SWAN Working Group; a member of our SAT, currently Roux, will continue as a member.

#### **b) The self-assessment process:**

The Mathematics department is one of 25 in the UK registered as Supporters of the London Mathematical Society's Good Practice Scheme (the LMS GPS) for women in mathematics. Until 2012 this implied working towards an associated Good Practice Award, now dropped by the LMS (so as not to replicate the Athena SWAN awards). Our GPS Working Group, established in 2011 under the chair of Niall Mackay, agreed in 2012 to work towards a Bronze Athena SWAN award. We thus reformed as the SAT, the chair passing to Victoria Gould.

The SAT meets regularly with two aims. One is to have an open discussion concerning situations particularly or disproportionately affecting women in the department or, more widely, in mathematics; one obvious focus has been to consider work-life balance issues faced by staff with dependants. The second aim is to work towards our application for an Athena SWAN award. The two are interwoven, the former often raising a discussion of qualitative issues, with the latter encouraging us to make a quantitative examination of data. The SAT passes recommendations for actions to the Departmental Management Team for endorsement.

In 2012 our Working Group conducted confidential interviews with all members of staff to discuss departmental management and culture, in the light both of issues affecting women's careers and wider matters of ethnicity and diversity. This was fed into the LMS report *Advancing women in mathematics: good practice in UK university departments* launched at the House of Commons on 27th February 2012. The LMS produced feedback and advice for individual departments, which we have fed into our Action Plan.

As a result of the interviews a number of changes were immediately instituted, particularly with regard to managerial structures, openness, performance review and Workload Model.

Records of our SAT meetings and actions are available to all staff on our Departmental VLE Moodle.

### **c) Plans for the future of the self-assessment team**

From October 2013, twice termly SAT meetings have been centrally timetabled so that approved working constraints will be automatically respected.

The Action Plan details the reporting and monitoring mechanisms of our initiatives, the overall responsibility for its implementation lying with the Head of Department and the Departmental Management Team. We regard the activities of the SAT as very much 'work in progress'. One important feature of our approach is to find out as much as we can from colleagues and students at all career stages, concerning their perceptions of the problems women face as mathematicians. We will dovetail quantitative assessment of our progress with feedback and suggestions gathered in this way, aiming to use this information to inform and assess our initiatives.

3. **A picture of the department:** *maximum 2000 words; currently 2060 – words on tables will not count*

#### **a) A pen-picture of the department:**

The Department of Mathematics at the University of York has 44 permanent academic staff, 10 Researchers (postdoctoral fellows on various kinds of temporary contracts) and 7 administrative staff. We have approximately 700 undergraduate students of whom 148 are studying for an Integrated Master's degree, 111 MSc students (86 campus based and 25 on an online distance learning programme) and 33 PhD students, of whom 7 hold Teaching Studentships. About two-thirds of the undergraduates study single-subject mathematics, the remaining third on a wide variety of combined programmes. Almost all students take a final year project module.

The university teaches in three terms and course structures are fully modular. Lectures are given by academic staff and some researchers. Supporting classes, which tend to grow in size throughout the programme, are taught by a mix of academic and research staff, and PhD students. The university is now considering its options for semesterisation. The Mathematics and University SATs were instrumental in insisting that this process must take into account the UK system of school holidays.

The department's offices and some small teaching rooms are housed in James, in keeping with the York campus vision of the accommodation for academic staff, and teaching spaces, being integrated with student rooms and facilities. Lecture theatres are mostly nearby around the campus lake. The buildings are part of the original 1960s construction, and do not offer ideal spaces for community interaction and cohesion. For example, PhD students have offices in separate annexes. In the longer term the university expects the department to be re-housed, but in the short term a minor facelift to our buildings has led to a more pleasant physical environment.

A number of research areas are represented in the Department. We have several joint appointments with Biology and Chemistry, with interdisciplinary staff working under the auspices of YCCSA. Some of these staff are housed on the new, adjoining, development at Heslington East, which is distant enough to cause timetabling and other logistical problems. To ease the situation the University has just instituted a staggered timetable, with lectures on the West and East campuses scheduled with a half hour difference. However, in spite of this, and efforts made by Mathematics administrators, timetabling continues to present problems for staff and students alike.

There are three 'Heads of Section' although the line manager for academics remains the HoD, appointed on a 4-year term. The HoD chairs termly staff meetings. Teaching programmes are overseen and administered by the Board of Studies, the Chair of which is supported by various other posts: a Deputy Chair; a small Teaching Committee and its Chair (who closely monitor delivery and generate and evaluate new teaching initiatives); and Admissions Tutors. The Board of Examiners, again comprising academic staff, implements and monitors assessment, with its own Chair and supporting Assessment Committee. Heads of Section, the HoD, the Chair of the Board of Studies and representatives from other groupings, together with managerial support, form the Departmental Management Team. Recently, the Team members have received training from Elementa Leadership.

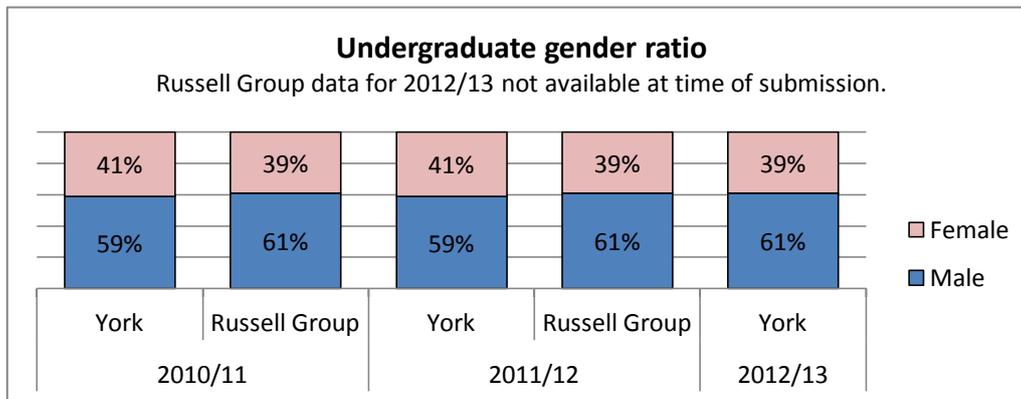
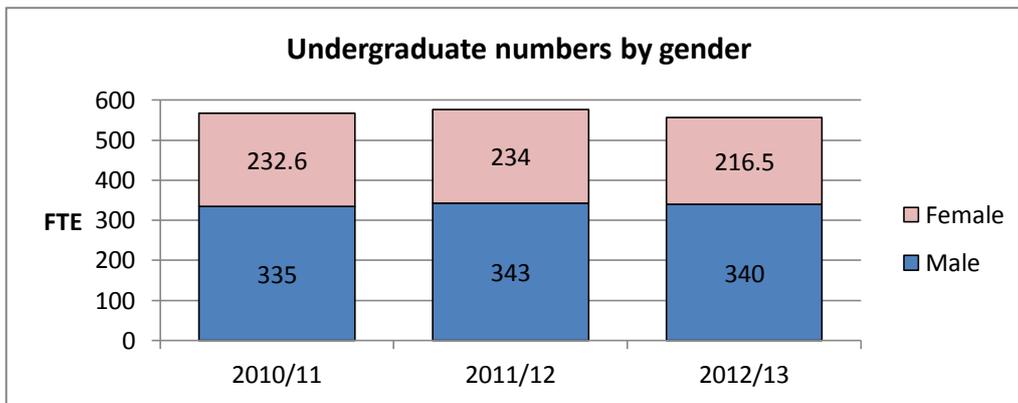
#### **b) Student data**

The biggest concern highlighted from the Student Data is the drop-off from Master's level to PhD study. We particularly struggle to attract female EU applicants that are successful, in competition with males, under our current approach to selection.

(i) **Numbers of males and females on access or foundation courses:** N/A

(ii) **Undergraduate male and female numbers:**

The female:male ratio for undergraduates remains fairly stable around 40:60, which is reasonably consistent with undergraduate programmes in Mathematics and Statistics offered at other Russell Group universities (see figure below). Nevertheless, the department will remain fully aware of the underrepresentation of women in undergraduate mathematics and will continue to monitor the numbers. We now offer one-to-one chats for applicants (who already have received an offer) with a representative group of staff; we are particularly aware that girls and boys with the same levels of ability may present themselves differently at interview – these chats are rather for the applicants to interview us.

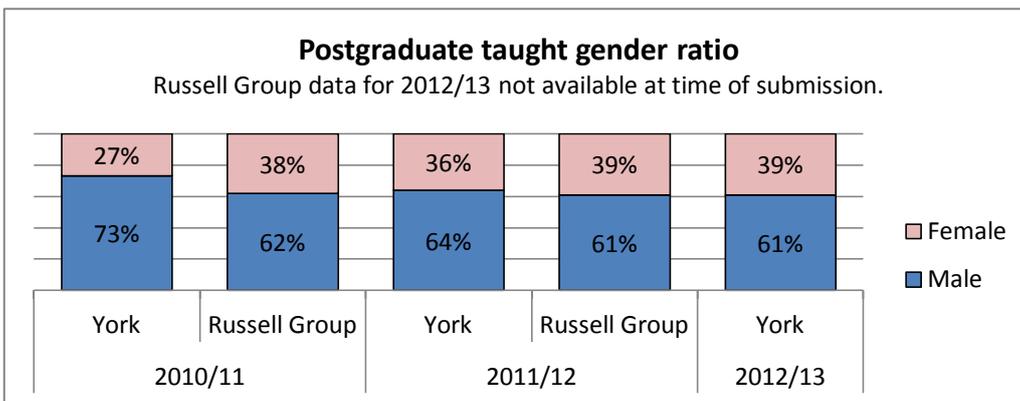
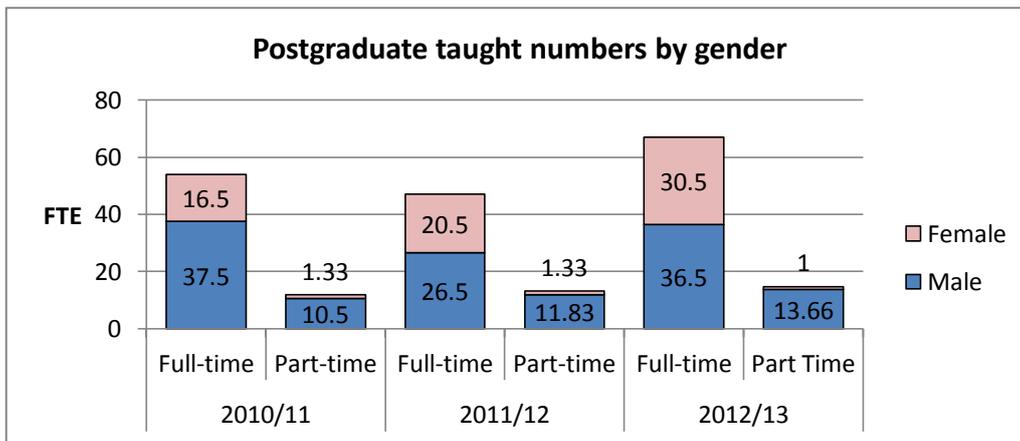


(iii) **Postgraduate male and female numbers completing taught courses:**

The female:male ratio of students on full-time programmes has been steadily improving in recent years, being approximately 45:55 in the last two years. This compares very well against gender ratios on comparable programmes offered by other universities in the Russell Group.

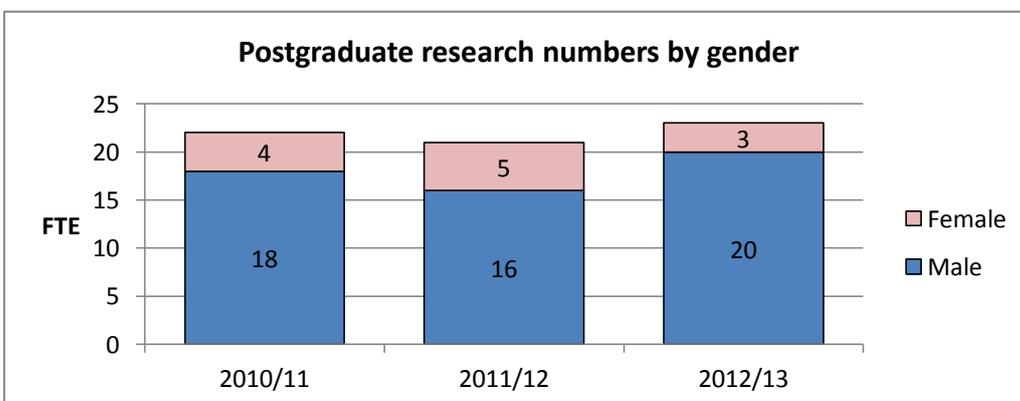
The majority of students on the campus-based programme are from the PR China. Our 'healthy' female:male ratio is largely a function of current Chinese educational aspirations. In a changing climate, we must continue to make our MSc programmes and application processes appealing to women.

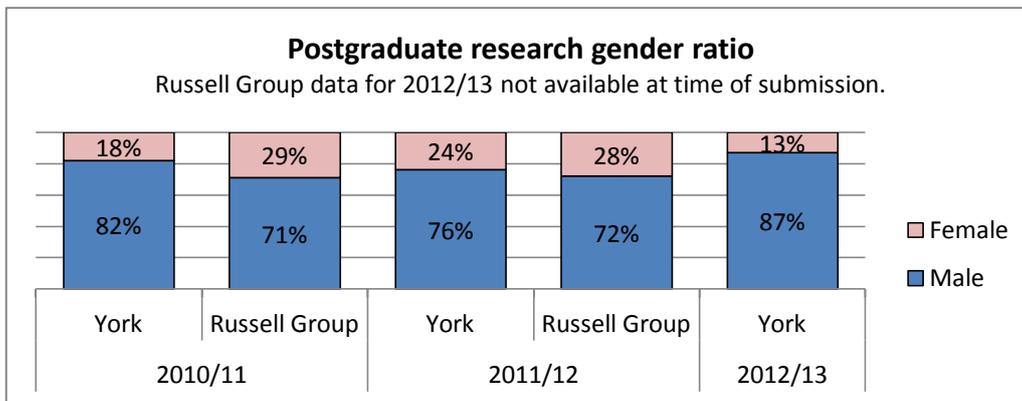
The female:male ratio on our single part-time programme, an online distance learning programme in Mathematical Finance, is much lower. The gender balance of students on this programme reflects at least in part the gender balance of professionals in the finance industry (at which this programme is aimed).



(iv) **Postgraduate male and female numbers on research degrees:**

The female:male ratio is towards the bottom end of the gender ratios of comparable programmes at Russell Group universities. The low student numbers explain the size of the fluctuations in the ratio. Moreover, the Russell Group itself performs rather worse in this regard than some other groupings of universities, for whom the numbers of women mathematical research students tends to be 5-10% higher.



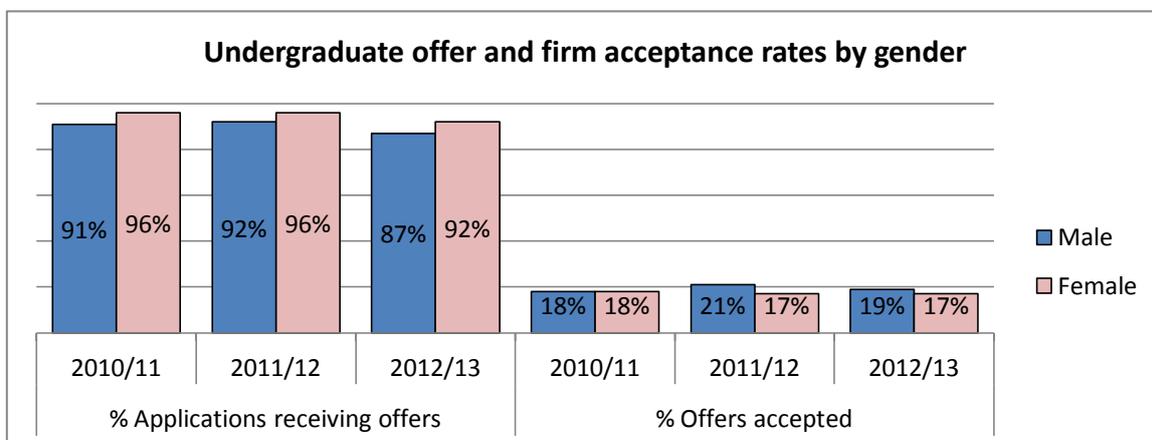


The data above masks an even more serious problem. Over the last 3 years, our Department has awarded around 15 DTA EPSRC Studentships and Departmental Teaching Studentships – all but one to men. The female research students are largely international and funded by their own governments. Graduate School Committee (GSC) is fully aware of the problem. Dr Roux is already a member of GSC and Professor Gould will join in January 2014. One initiative is to compare the internal grades given to applicants by interview panels with previous academic attainment. If a discrepancy arises we can address the weight given at interviews to a confident presentation and examine whether that is gender related and/or an indicator of future research ability (Action 1.2).

**Case study** In Summer 2013 we received a late application from a female for a PhD place and Teaching Studentship. We felt her case was so strong that, following competitive interviews, GSC agreed to take money from next year's DTA to fund her through a PhD.

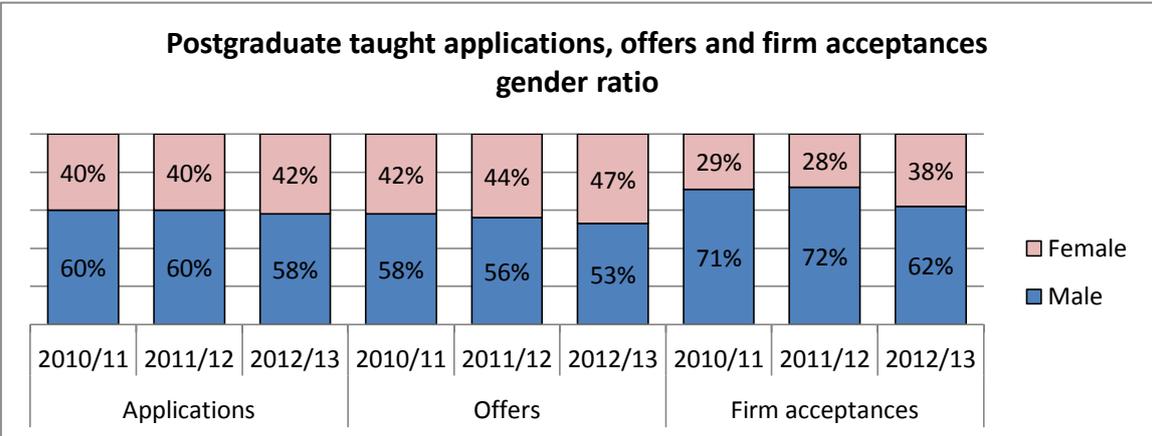
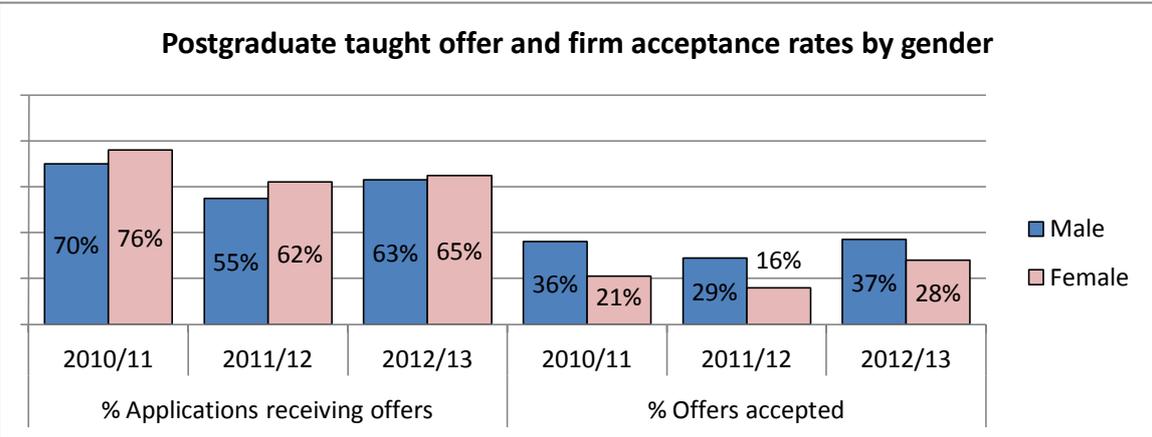
(v) **Ratio of course applications to offers and acceptances by gender for undergraduate, postgraduate taught and postgraduate research degrees:**

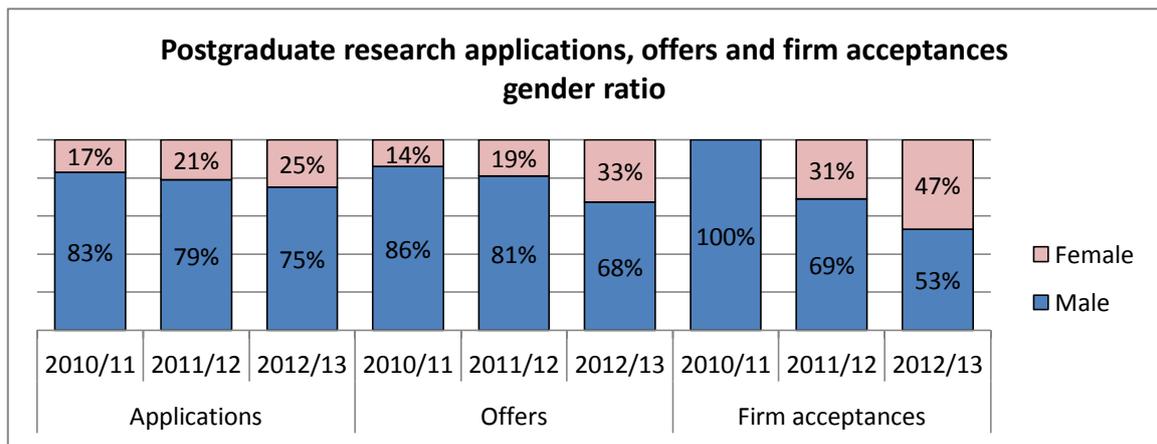
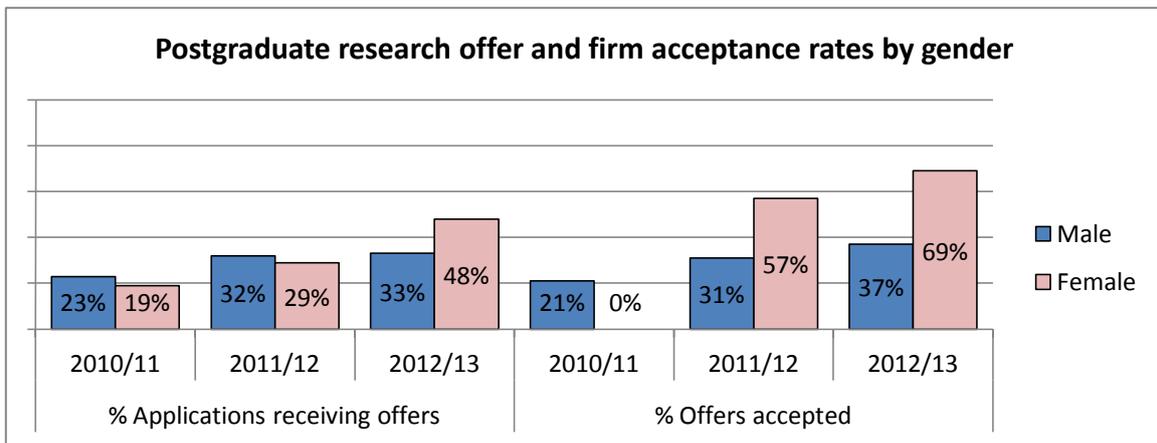
For undergraduates, the percentage of applications receiving offers is slightly higher for females. Departmental admissions policy does not take gender into account, so this might indicate that applications from females are generally stronger and perhaps are being more 'self-selective' than males. The percentage of offers accepted is broadly comparable between males and females, with the offer acceptance rate for females being slightly lower.





The data for postgraduate students should be treated with caution, since postgraduate applicants often neglect to accept an offer (but still attend the programme), or accept offers from different universities. Moreover an *offer* is for an academic place to study for a PhD. As we have pointed out, the data for *funded* places is much less rosy. UK students normally only accept funded PhD places.

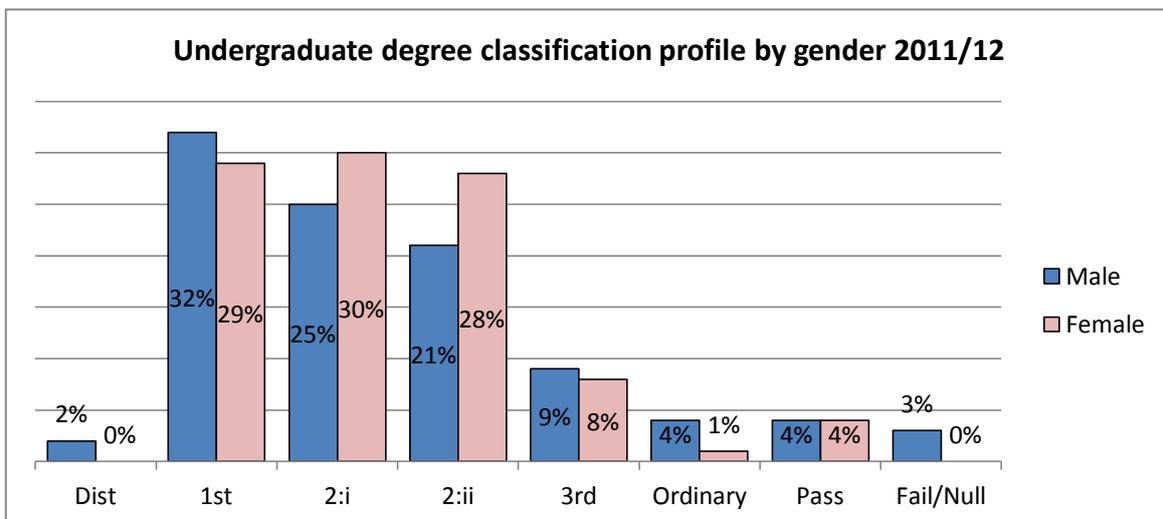
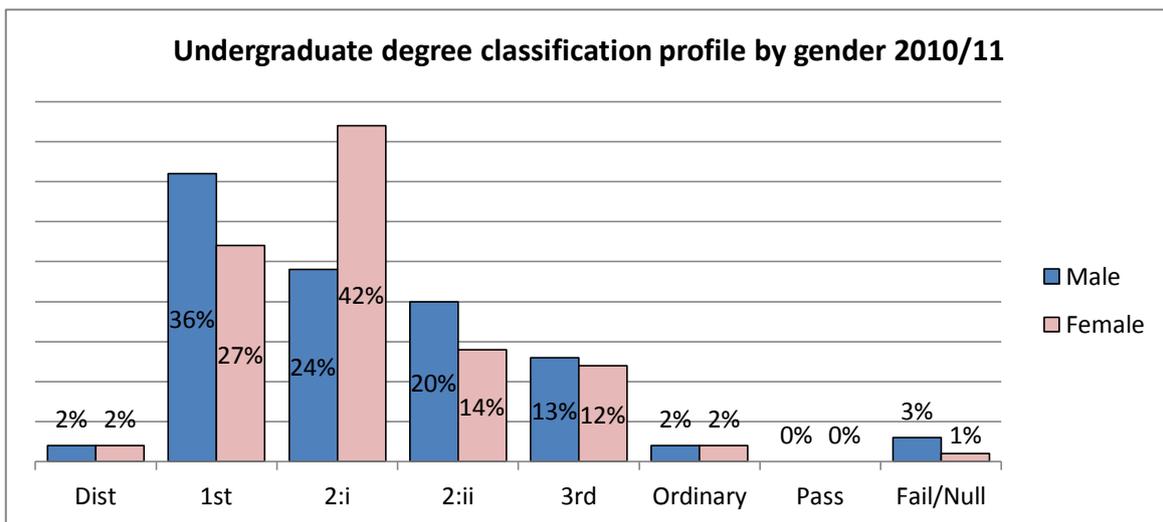
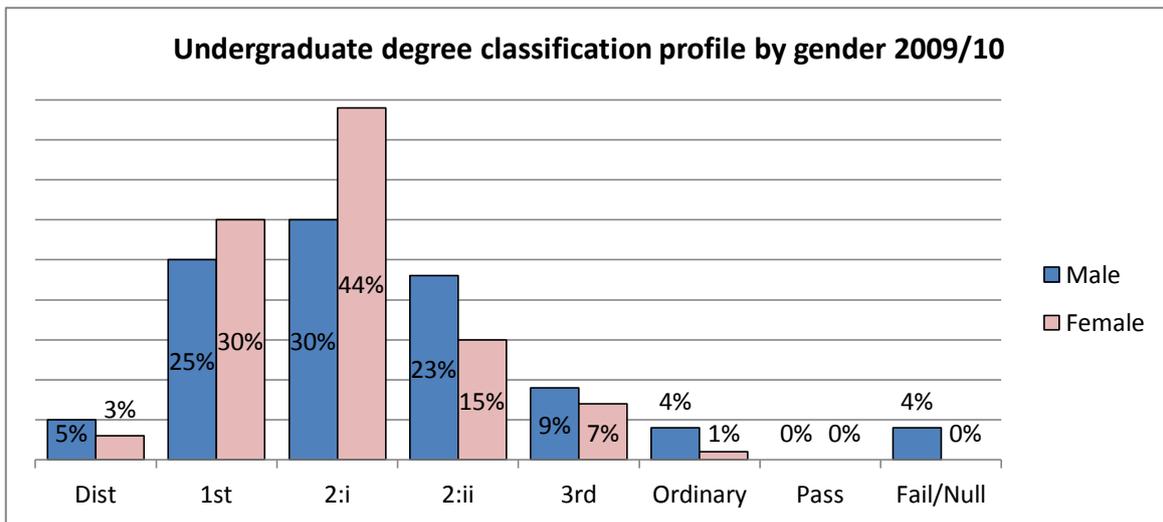




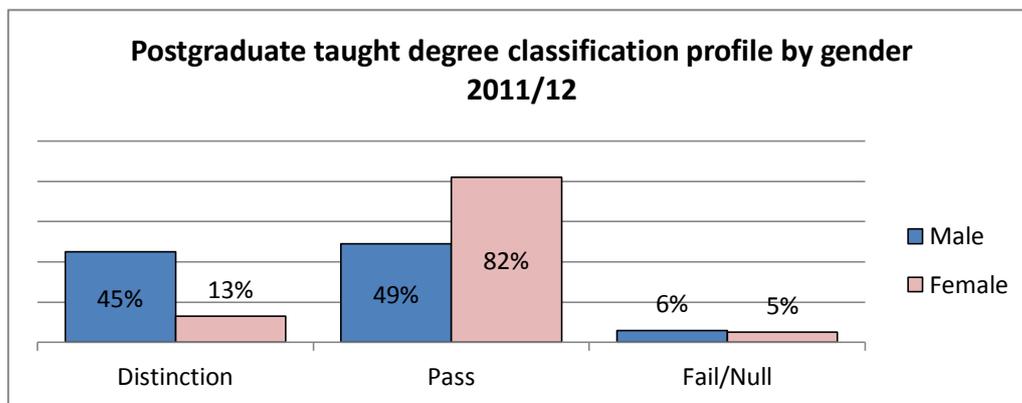
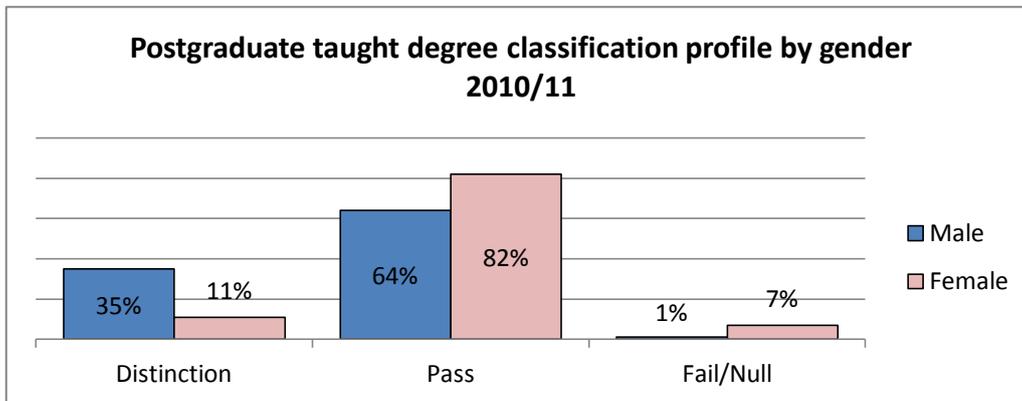
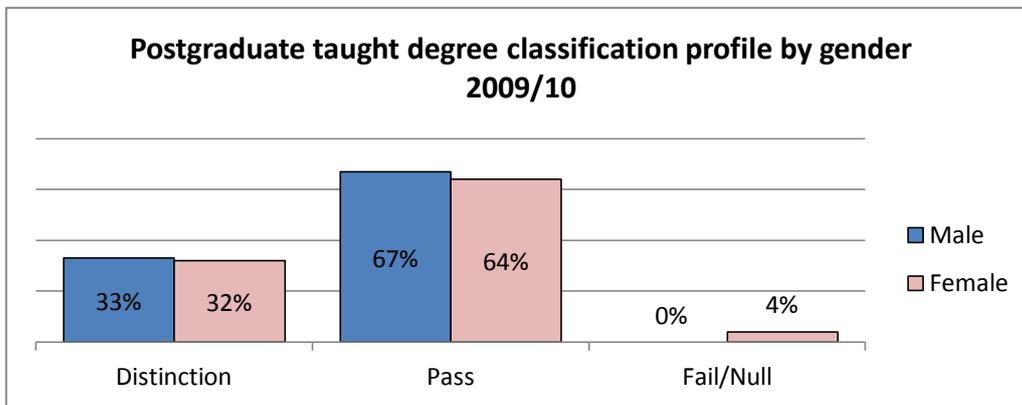
(vi) **Degree classification by gender:**

For undergraduates, the percentage of males with weak (fail, pass, ordinary) results is higher than the corresponding percentages for females. This may be a consequence of the gender composition of our weak students or it may be there is something we can do to help male students at risk of failing. Having abolished assessed coursework in 2010/11, we are considering re-introducing it to encourage engagement with studies throughout the year.

The percentage of undergraduate males and females achieving the top grades is similar. There is however a significant difference in achievement around the 2:1/1st borderline: the data suggests that males are more likely to get a 1<sup>st</sup> than a 2:1, and for females the opposite. We are also concerned that over the last 3 years 27% of our prize winners have been women, whereas they form around 40% of our student body. Is there something that we can do to level the playing field for students achieving at this level? Does our current examination system advantage one gender over the other?(Action 1.5)



The picture for taught postgraduate students is similar in that females are less likely to fail than males, but also less likely to achieve a distinction. The pass rate for postgraduate research students is 100% over the period 2009-2012.

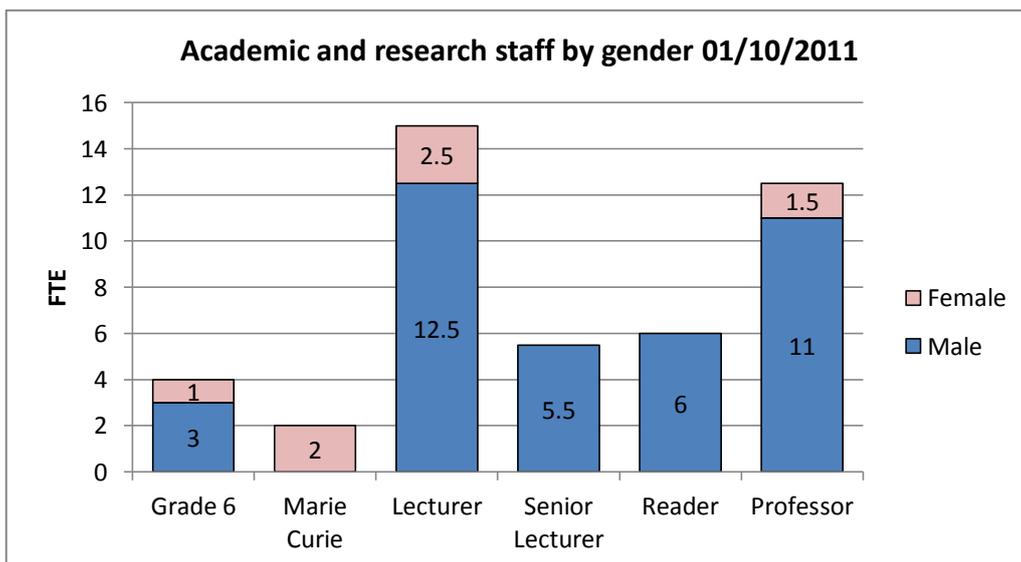
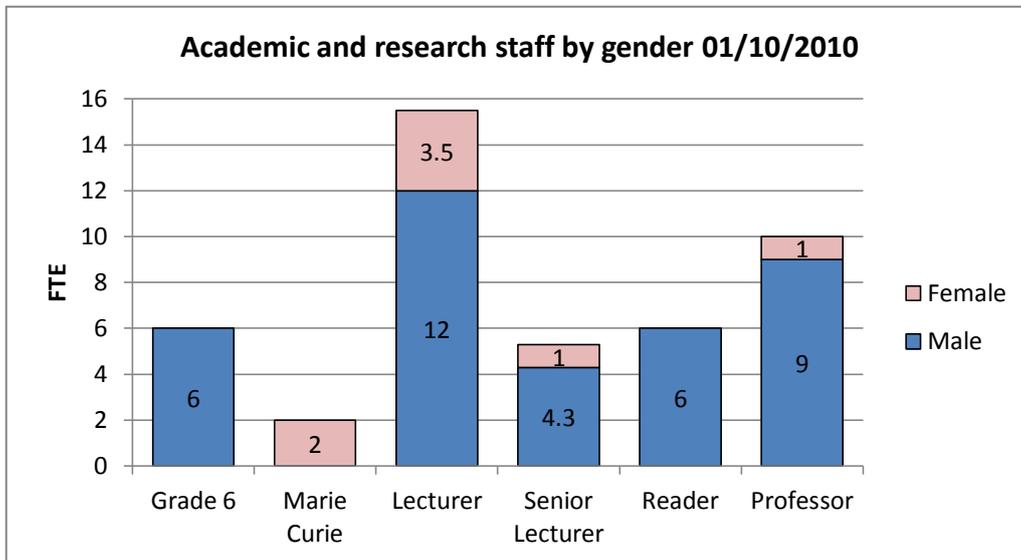


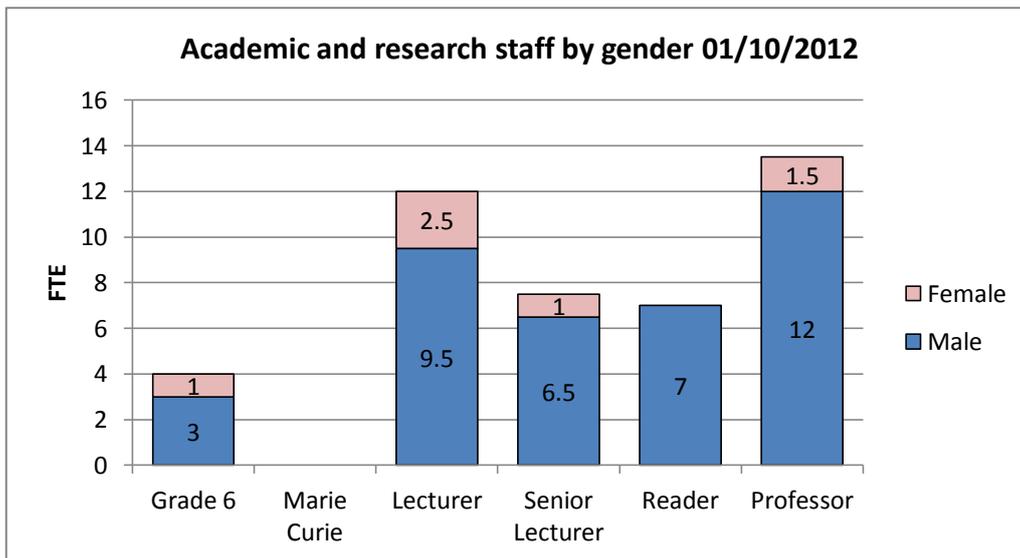
**c) Staff data**

Women are under-represented at all grades. This is a common and unfortunate phenomenon in UK mathematics departments. The International Review of Mathematics commissioned by EPSRC in 2010 reports *'The Panel can state that, compared to other countries, the proportion of women is strikingly small .... Possibly more worrying than the numbers was that, with a few notable exceptions, the people with whom we spoke did not seem to be particularly concerned about this issue.'* The picture for 2013/14 is encouraging, but we cannot be guaranteed without effort that this increase in women staff will continue without our making considerable effort.

**(vii) Female:male ratio of academic and research staff**

The possible exception in female underrepresentation is that of Grade 6 and Marie Curie, which together correspond almost exactly to our Researcher community. For this group the percentage of females at 01/10/2010, 01/10/2011 and 01/10/2012 was respectively 25%, 50% and 25%. The total numbers are very low, so year on year fluctuations are to be expected. On the other hand, the percentage of females amongst all permanent staff for those dates is 15%, 10% and 13% and the percentage of females amongst professorial staff for those dates is 10%, 12% and 11%. The numbers confirm that the most severe drop off is at the stage Researcher (almost always a temporary position) to Lecturer (almost always a permanent position).





There are major problems for both male and female mathematicians in moving from Researcher to Lecturer. A permanent academic job is very hard to obtain, resulting in fierce international competition; further, an academic career is hard to mix with family life. Undoubtedly the latter problem affects women more than men. We hope our procedures and initiatives will demonstrate we try to do whatever is in our power to help women pursue their careers. However, for as long as the standard academic career requires a number of moves (often to different continents) at the exact age when women might think of permanent relationships and children, it is hard to see how the problem will not persist.

The lack of female representation at higher levels we believe to be largely due to (a) the pipeline – we are acutely aware of the need to appoint more women– (b) possible reluctance in women to apply for promotion and (c) the lack of external female applicants for chair appointments.

We are putting a number of initiatives in place that should eventually improve the recruitment, retention and promotion of women – please see the relevant paragraphs in Section 4.

**Case study** In Spring of 2013 this Department advertised 3 lectureships: one each in Statistics, Mathematical Finance and ‘general’ Mathematics. There were 119 applications in total, of which 20 were women. We appointed women to two of these positions. Thus we are increasing the number of female academic staff to 14% and moreover, the evidence is that women had proportionately a greater chance of success in our appointment process than men.

(viii) **Turnover by grade and gender:**

The turnover in staff is very low, in general, although higher amongst statistics staff (the demographic of statistics staff appearing rather differently from that of general mathematics). Over the last three years three members of staff have left – two male statistics lecturers (to other positions) and one male teaching fellow at the end of a short contract.

Historically in this department, the attrition of female staff has been due to either temporary contracts ending or partners having positions in other locations (the ‘two-body problem’). The solution to the latter is out of reach of an individual department, beyond a real willingness (which we certainly do have) to make special arrangements where possible.

**Case study** Dr Brent Everitt's partner held a job in Adelaide for a number of years. We allowed Dr Everitt to take extended unpaid leave on two occasions so that he could work in Australia and return to York at times when his partner, in turn, took unpaid leave.

#### **4. Supporting and advancing women's careers: maximum 5000 words currently 5141**

Academic careers are fundamentally different from those in many other professions, requiring half a lifetime of progression and development. Staff are neither appointed nor judged on what they can do *now*. Rather, they are judged on potential and their continual development. A successful career normally involves lasting contributions to research, scholarship, teaching and the administration of departments and wider institutions.

The judging panel is of course fully aware of problems faced by female scientists in the UK. Nevertheless, we would like to point out that every subject area has its own, particular, problems (and therefore possible solutions). For mathematics, an academic career generally involves a number of changes of institution in its early stages. Post-doctoral positions almost always require extremely specialised skills, and it is often unreasonable to look for those locally. We view ourselves as being successful if we see our PhD students (of either gender!) progressing to Post-Docs and eventually lectureships elsewhere. This should be borne in mind when examining the data of any *individual* department.

We have already indicated some of the reasons why female representation in UK mathematics departments is so low. There are others, such as the general absence of funding for postgraduate Master's degrees in Mathematics. Consequently, our young researchers are competing for Post-Docs with better qualified candidates from overseas, who have *both* MSc and PhD degrees. Another factor is the low pay of academics, particularly Researchers, as compared to those in other professions. Typical destinations for mathematics graduates are into the higher paid professions of accountancy, financial services including the City, actuarial work, and IT. The question of poor remuneration (compared to other professions) has real impact on women's academic careers – a higher earner, such as an accountant, can afford to fund substantial childcare out of earned income, thus preventing a career hiatus.

It is fair to say that UK culture is known to be a little biased against mathematics (it kills a party conversation stone-dead to admit you are a mathematician) – perhaps this is changing slowly, as are the views, at least expressed openly, that 'girls can't do math(s)'. However, an unconscious bias against female scientists certainly remains (see for example <http://news.harvard.edu/gazette/story/2013/02/peering-into-our-blind-spots/>) – we will invite Professor Paul Walton (Chemistry, York) to speak to our Departmental Management Team on the subject of unconscious bias against women (Action 5.5). Paul was instrumental in Chemistry obtaining a Gold Athena SWAN award.

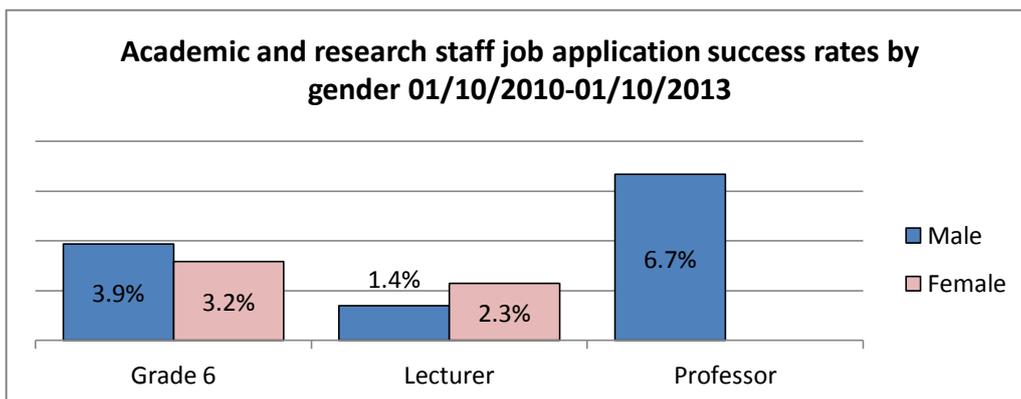
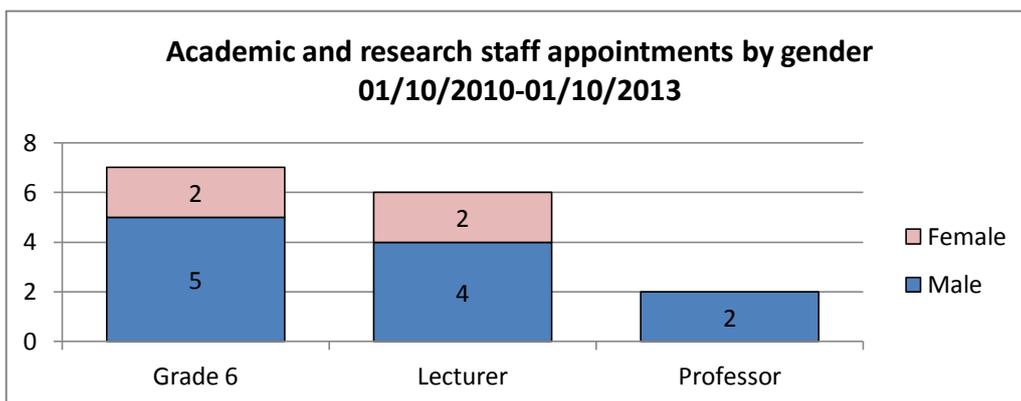
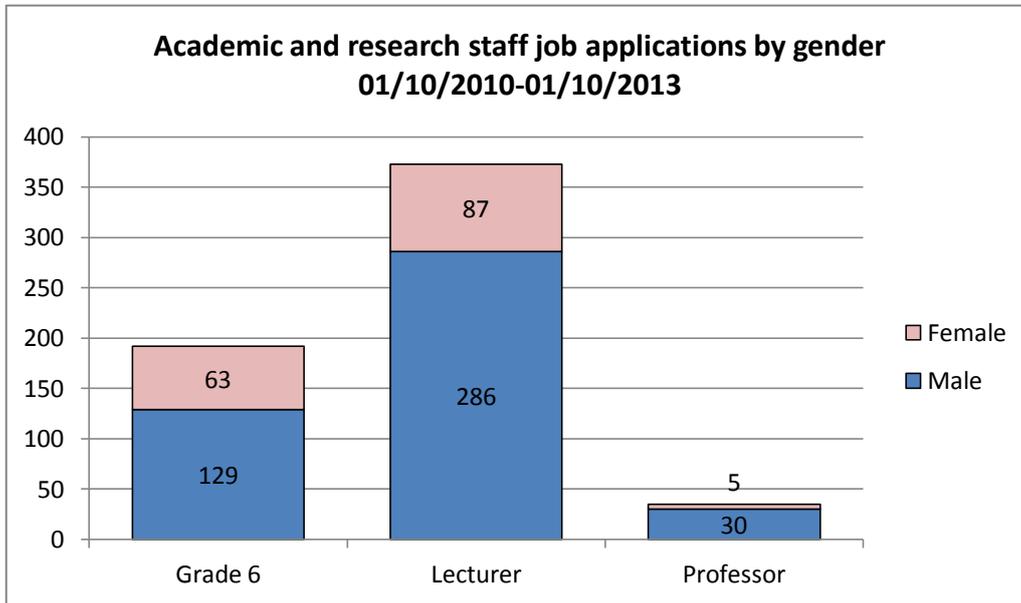
Clearly, any individual department, or even an individual country, cannot solve all the problems standing in the way of women in science. What we can do, however, is to make positions in our department as appealing as possible to women applicants, and to remove as many barriers as we can to their progression. We are at the beginning of this process, and, as we indicated earlier, will constantly review whether our initiatives are helpful, and what else we can and should be doing. The hope is that if enough departments in the UK take part in the Athena SWAN process, then, eventually, there will be a substantial change.

**Key career transition points**

a)

**(i) Job application and success rates by gender and grade:**

The overall percentage of women applicants from 1 October 2010 to 1 October 2013 to all academic and research positions in the department is 26%, with women having a slightly higher overall success rate (2.6%) than men (2.5%).



However, a further breakdown reveals that for Researcher positions the percentage of women applicants is 33% with a success rate of 3.2%, and for academic positions the percentage of women applicants is 23% with a success rate of 2.2%.

We commented in Section 2.6 on the recent round of new lectureships. The picture for more senior positions is less rosy. Over the last 3 years the department has advertised and appointed a Chair in Statistics, an Anniversary Chair and a position as Head of Department. The successful candidates were men, but the proportion of women applicants was very low – 4 out of 18 for the Chair in Statistics and 1 out of 17 for the Head of Department. (We do not have the figures for the Anniversary Chair, as the process was administered in a non-standard way).

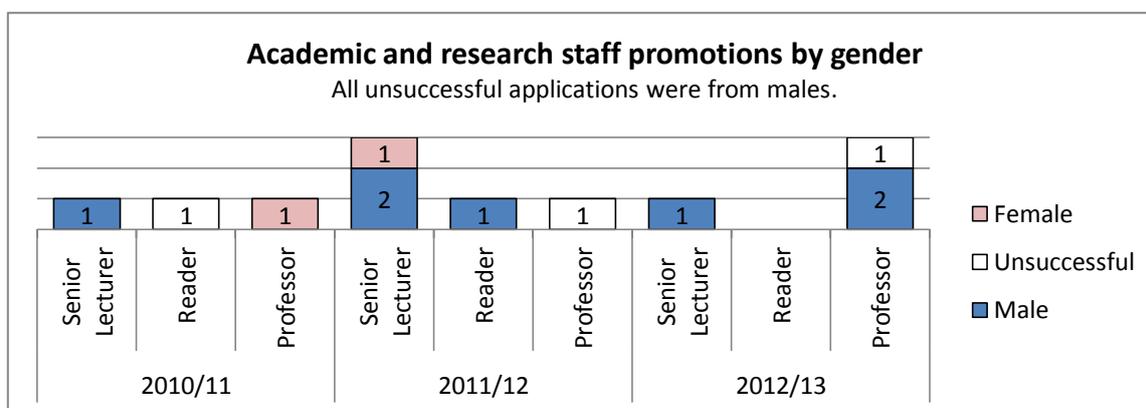
These figures indicate that our largest problem is in attracting female applicants. We suspect there is a greater degree of 'self-selection' amongst women mathematicians – who perhaps are less likely to put themselves forward for a position they feel to be only just qualified to do, particularly at senior level. The Chair of the University Athena SWAN working group has arranged for our webpages to be reviewed with a regard to eliminating gender bias, and we will implement new ways of encouraging suitable women applicants (Action 3.4).

For senior positions there may be a pipeline problem - the low numbers of women experienced enough to apply. However, we are aware of the danger of complacency and look to ways to encourage more senior women to consider us as a career destination. One possibility would be to offer extra incentives such as help with childcare – but this would be helping better salaried individuals over those in less well remunerated positions – which we feel would be unjust. Internal applications for externally advertised Chairs are very rare – such positions are normally due to the University and Department wishing to attract new talent in particular strategic areas.

The University of York runs a successful Campus Nursery, for which colleagues can receive an effectively discounted rate via a salary sacrifice scheme. However, places are limited and there is little flexibility and no possibility of visiting academics being able to make use of it on a temporary basis. The University is aware of our concerns and we will continue to make representations on this matter to the University SAT. We feel that lack of affordable and flexible childcare is one of the biggest impediments to women's academic careers.

**(ii) Applications for promotion and success rates by gender and grade:**

As is standard in many UK universities, the promotion procedure at York is administered by the University, not departments. There are generic guidelines in place for candidates, and a panel of scientists reviews applications from science departments and form a sifting process before the applications are passed to Promotions Committee. From the data, there is no evidence for bias against women in our promotion procedures. We feel that it would be useful to examine the number of years colleagues remain on each grade before 'moving up' and intend to start to gather and examine that data (Action 3.5).



b)

(i) **Recruitment of staff:**

All departmental positions are openly advertised on the Departmental webpages and on jobs.ac.uk. Current members of staff are also asked to encourage suitable candidates to apply. Adverts contain information relating to the flexible working policies of the university and some members of staff actively encourage suitable women to apply. We always ensure there is a woman on the shortlisting panel and on the interview team, as recommended by the University's equal opportunities policies. We have recently had success in employing two women, filling two of three lectureship vacancies. However, in some areas (particularly pure mathematics) the number of suitable women applying is relatively low and the field aggressively strong. This is a continuing problem – we have not recruited a female pure mathematician to a full time lectureship in over 10 years.

Clearly, we have work to do. We will formalise the procedure whereby women candidates are encouraged to apply. When jobs are advertised in future, the Head of Department will ask a relevant senior member of staff to coordinate the identification, and invitation to apply, of suitable potential women applicants (Action 3.4). We envisage that the review of our webpages will ensure we have positive role models and information concerning flexible working prominently visible.

(ii) **Support for staff at key career transition points:**

The figures in Section 3, as well as discussions with current and former staff, indicate that the biggest problem is the transition from Researcher to Lecturer. We stress that this is not just in York, but a problem existing at least at European level. Nevertheless, this department does have a good record of Researchers moving on to further academic positions, some of them permanent and in several cases to permanent positions at York. In the last ten years we have around an 80% success rate in this regard. Indeed, five professors in the department (Victor Beresnevich, Victoria Gould, Maxim Nazarov, Reidun Twarock and Sanju Velani) started here as Researchers (some rather more than 10 years ago). We emphasise again that if our Researchers move to further positions elsewhere we do not feel we have failed – finding the right job at the right time in the right place in mathematics is very hard – and there is no particular expectation for Researchers that it will be at one's current institution. This culture in itself presents difficulties for women.

The University of York was one of the first 10 institutions in the UK to be recognised by the European Commission for its "HR excellence in research." It has an excellent programme of

personal development training run by the Personal and Organisational Development Team (POD), with many courses aimed at junior staff and a sub-team Researcher Development Team (RDT) focussing on training for Researchers. The courses offered include generic research skills and organisational training, including advice on things such as applying for grants, building and writing a CV, and building impact into research. The University also runs a Postgraduate Certificate in Academic Practice (PGCAP). The latter is a 60 credit Masters-level programme, and is designed to support and enhance the engagement of University of York staff with their academic responsibilities. Although PGCAP is primarily aimed at new, permanent, academic staff with less than three years full-time teaching experience, it is also available to Researchers. A 20-credit slimmed down version of PGCAP will shortly be made available and this might be even more suitable for staff on one or two-year research contracts, enabling them to better integrate training with the research aspects of their workload. Researchers can also book an appointment with a Research Staff Developer.

In addition to a University induction programme, the Department runs such a programme for new staff. We are in the process of updating our staff webpages so that information concerning working practices, university policies on flexible working, research leave, travel money etc are all easily accessible and clearly presented (Actions 5.3 and 5.4). To speed these efforts, we have applied to have a University sponsored intern in the Spring term.

All new members of staff are assigned a mentor. This process has, however, been relatively low key and we will make it formal (Action 4.1). Experience has taught us that informal processes tend to get pushed aside by the tide of formal requirements of today's academic jobs. Researchers are invited to develop a Personal and Career Development Plan with their line manager (usually, the PI on their research project).

Further up the scale, we have as yet no formal mechanisms for supporting staff at career transition points, other than the guidance given via our Performance Review mechanisms. Success in promotion relies on a number of factors, one of which being a demonstration of capability in departmental administration. The Head of Department bears this in mind when assigning administrative positions. The SAT will consider what, if any, formal procedures might help staff to advance, such as the possibility of leadership training (Action 3.2). We can look to initiatives implemented by other science departments in York, including Chemistry, which holds a Gold Athena SWAN award.

## **Career development**

### **a) (i) Promotion and career development:**

The University of York runs a system of yearly Performance Review (PR) for all staff. Academic staff in Mathematics are normally reviewed by the relevant Head of Section, or, in the case of Professorial staff, by the Head of Department. Research staff are reviewed by their line manager, usually the Principal Investigator of the research project on which they are working; this process may be dovetailed into the probation meetings that take place during the first year of a contract. Non-professorial staff can request an alternative performance reviewer if they feel it would be appropriate (University procedures would make such a request very difficult for Professorial staff). The system of review is currently changing from Portfolio Led (in which staff submit a resume of their year's activities) to one which is Objective Led (objectives are defined for each year and the review identifies which have been achieved and any training which might be needed).

The majority of staff view the PR as an opportunity to discuss their progress with a sympathetic colleague in a position of enough experience to advise and help. In the past, performance reviewers have been asked to 'encourage' staff to apply for promotion where appropriate. The Head of Department has made it clear that all staff thinking of applying for promotion can approach him for advice.

To ensure greater consistency in approach, the SAT is proposing some formalisation of this mechanism. The intention will be that staff submit a CV each year as part of the PR, with a copy to the Head of Department. Discussion of the CV, with a view to the possibility of applying for promotion, must form part of the PR. A record must be kept that the CV has been submitted and suitability of promotion has been mentioned, or that the member of staff has given good reason to opt out of this process (Action 3.1). Note that the timing of our yearly PR is now at the end of each academic year, so that staff can receive advice and support in good time for the next round of promotions.

The promotion criteria are set by the University and cover all aspects of academic life: teaching, research, administration, pastoral work and outreach work. Both quality and quantity are emphasised, but the Head of Department in his or her supporting statement can stress which is most important in any one case. Staff have the opportunity in a covering letter they submit with their application to explain any career break or caring commitments that might have affected their research profile.

**(iii) Induction and training:**

The University provides central induction training for new staff, and specific induction training for staff taking on a managerial role. In addition, the Department runs an induction day, which contains information about training that the University provides. Of course, induction days form just the beginning of a process of integration. As already stated, we are reviewing our staff webpages to contain all necessary information for new (and old) staff, with links to the relevant pages on the HR website and summaries of policies where appropriate, including those on flexible working (Action 5.3). The webpage will contain information about and links to the University's POD team and an indication of the courses available (as in 4 b) (ii)). The necessity for training, and the suitability of certain courses, is also discussed at PR. Line managers of Researchers and supervisors of PhD students are kept up to date by a member of administrative staff on any relevant training for themselves (as managers of junior staff) and for the Researchers they supervise, and also of any opportunities they should pass on to the latter.

During the central induction sections, staff are informed of an online Diversity in the Workplace training module, provided by HR. HoDs are asked to remind staff to complete this training. Gender is incorporated, along with the other protected characteristics, into this module. Further information is provided by the Equality and Diversity team during induction training. We feel this is especially important to combat any inbuilt prejudices coming from the wide range of cultures (including British) represented in the Department.

**(ii) Support for female students:**

There are no formal mechanisms in this regard but it will be considered in the SAT meetings in the coming academic year.

York is run on a collegiate system whereby all students are assigned a personal supervisor, who oversees all aspects of a students' progression, both personal and academic. Due to the small proportion of women on the academic staff in Mathematics, and the healthy proportion of women undergraduates, it would not be feasible to offer a female supervisor to all students who request it. One suggestion (to be further debated by SAT) is that there should be a Woman's Tutor with whom female students (both undergraduates and postgraduates) can make an appointment if they wish. Of course, this has been happening informally and in an unrecognised way since the Department first had a woman on its staff. This would be acknowledged on the Workload Model (Action 4.4).

**Case study of Dr Sonia Mazzi's supervisee :** A female student ranking among the top 5 in her cohort had completed her studies and had not made any career decisions. She put all her efforts in her exams and final project but did not even inspect possibilities of a paid post-graduate position. Dr Mazzi encouraged her to inspect a few opportunities for PhDs and prompted her to apply for them. Dr Mazzi proof-read a personal statement and CV, helped with interview preparation and gave personal support. The student is now a PhD student in a very prestigious university working on a cutting-edge research project.

### **Organisation and culture**

#### **(i) Male and female representation on committees:**

*Departmental Management Team* – nine members of academic staff, one of whom is female and the Departmental Manager (Mrs. Walton); the meetings are also attended by University staff, namely, a male academic and a female administrator.

*Board of Studies and Board of Examiners* – these are the main Departmental committees and all members of the academic staff (and those Researchers involved in teaching) are members.

*Graduate School Committee* – eight members of academic staff, of whom one is female (and it will be two after January 2014) .

*Research Committee* – ten members of academic staff, of whom one is female.

*Teaching Committee* – six members of academic staff, one of whom is female.

*Mitigating Circumstances Committee* – five members of academic staff, one of whom is female.

*Moderating Committee* – previous to June 2013, this was a small committee composed of four male academics. It has been expanded to include a further male and two females.

*Note: The numbers do not include secretarial support, which in all cases except for the Graduate School Committee is by women.*

The representation of women on Departmental committees is in line with the proportion of women in the Department. We are aware of the problem of overburdening women with committee work (the above only represents Departmental committees, and does not include Departmental Working Groups, University committees, or external bodies). The de facto policy is

that each committee should have at least one woman member, but to avoid the issue of overload, it usually remains as one. This does mean that women are slightly under or over-represented on individual committees. Potential members are usually identified by the Chair of the Committee, or by the Head of Department, who attempts to allocate administrative duties of this kind in a way that will both help the Department and help the promotion prospects of the individual.

It is to be noted that all the Chairs of committees, and all the Heads of Section, are males. This is partly a pipeline problem, and partly an issue that female members of staff tend to be on several committees (to ensure non-zero female representation) – to ask women to take on the role of Chair could result in overburdening them.

It is worryingly clear from the data presented above that there is a significant drop-off in the ratio of females between temporary and permanent staff. Already in this document we have examined the support mechanisms, both Departmental and University, for Researchers, given some reasons behind the attrition above, and put forward some ideas for lessening this drop-off (Actions 4.1, 4.2).

On an individual level, members of staff actively mentor women from outside York in cognate areas, and, given that at the research level mentoring tends to work best within subject groups, this can be valuable when it comes to Researchers applying for positions. We do not see a mechanism, however, whereby this could be made formal.

As with all other aspects of our gender-specific data, we will continue to monitor the situation and search for remedial initiatives.

**(b)Representation on decision-making committees:** there is a balance to be achieved between adequate female representation on committees and not overloading the female members of staff. The figures suggest that Departmental committee membership is in line with the gender profile of staff. Women are regularly put forward by the HoD to serve on University. However, committee work must be balanced with a strong performance in research and teaching when candidates apply for promotion, particularly at Reader and Chair level.

(i)

**Workload model** – the Department introduced a preliminary Workload Model (WM) in 2011. This is currently under review by a team within the Department, to fine tune the system, give clarity to the process and to be more comprehensive within its remit. The model gives 'points' to all teaching and Departmental and University administrative duties (a point represents a unit of the size of teaching one undergraduate seminar).

It was felt that the previous WM underestimated the time given to administrative duties, and the review is intended to address this. The open ended nature of these duties can militate against those whose hours are eventually constrained by family obligations agreeing to take them on, thus eventually hindering progression. This issue was recently highlighted in a report 'Promoting Positive Gender Outcomes in Higher Education through Active Workload Management' by the University of Salford, funded through the HEFCE Leadership, Governance and Management Fund, which looked at the gendered effect of academic workload allocation.

As part of the review the WM has been renamed the Contribution Model (CM). An important principle is that it should measure job size rather than incorporating possibly prejudiced (and

prejudicial) measures of job 'importance', and that a measure which makes disparate jobs commensurable is very important in ensuring both (1) that any gender bias in job assignment does not act against women's careers, and (2) that lack of uniformity in gender representation requirements, such as that there be a woman on every appointment panel, does not result in an increased workload for women. It has been agreed that previously excluded duties such as sitting on Shortlisting and Interview panels, for which women carry a disproportionate burden, will be included.

It is not clear that the jobs that for largely good reasons are still seen to be 'women's work' such as Equality and Diversity, Athena SWAN and Harassment Advisor, are given adequate weight within the Department nor at promotion, but the trend is in the right direction. These are certainly all now recognised by our CM.

As yet, the CM does not include external administration such as External Examining or sitting on Research Council panel meetings. Given that these duties are necessary for UK academic life to run smoothly, and contribute towards fulfilling promotion criteria, this is being addressed.

It is not reasonable to suppose that workload is evenly spread amongst staff in any one year, but we are aiming to equalise within 50 points over a 3 year period.

The Chairs of Committees normally have a 3-5 year rotation, as do the positions of Head of Department and Heads of Section.

**(i) Timing of departmental meetings and social gatherings:**

We are already learning that a 'one size fits all' approach to networking opportunities is not appropriate. For example, a group of women in the department meet occasionally to make art and drink wine, but this is at a time when those with family responsibilities cannot attend. On the other hand we attempt to socialise Departmental events, such as days on which we are interviewing for positions, by organising buffet lunches to which all staff and often PhD students are invited. On a more informal level, the Campus has a number of good eateries where colleagues gather for lunch and coffee.

Departmental meetings (Boards of Studies and termly Staff Meetings) are being scheduled, where possible, to begin at 1pm so that with a 3pm finish those with family responsibilities can still attend. Social activities tend to follow these meetings or to be at the end of the afternoon, running into early evening.

We have no official 'Core Hours' policy as affecting all and we have so far been unsuccessful in seeing how to take one forward, given that the University has no such policy. Departmental Colloquia normally take place in the early afternoon so can be attended by all. Beyond the official rules we try, as far as is possible, to take family responsibilities into account. E-mail has certainly made home working easier. The SAT will investigate if we can develop a 10-4 Core Hours policy in mathematics in a way that can be sensibly maintained (Action 5.6).

**(ii) Culture**

As noted earlier, the first act of the Working Group was for members of the Group (other than the HoD) to conduct personal, informal interviews with all colleagues, with an explicit commitment to anonymity. We examined issues not only of gender but also of age, race and other diversity issues

- after all, our community brings together people who grew up in an enormous range of worldwide cultures and contexts, and have usually worked at various career stages in many more. The most positive, and heartening, outcome was the general perception of collegiality - that most colleagues will help and support each other, and are committed not only to the efficiency of the departmental team but to the creation of a pleasant working atmosphere. Both the departmental working atmosphere and the wider national culture within which it sits were viewed favourably in contrast to some others which colleagues had experienced.

However, there were exceptions, with some individuals being viewed as acting less collegially and in less of a 'volunteering' spirit. It was commented that some professors seem unwilling to take on larger administration and leadership roles. There was a view that the Departmental Management Team had been somewhat dysfunctional, and Heads of Section had provided rather variable careers advice. But the predominant view of the overall direction of the department, whose size has nearly doubled over the last decade, is that it is now working hard to create the right structures for its smooth running, and especially to be more transparent in all its workings, especially workload allocation.

First names are used throughout, as is common in most UK universities. There is a slight worrying trend amongst the students to be a little more abrasive in their correspondence. This does not seem to be gender related, but more a wider cultural issue, that we will continue to observe.

### (iii) **Outreach activities**

The Department has successfully engaged with outreach activities to young people for a number of years. These range from involvement in York Children's University Taster Week, the University of York STEM residential school, classes to help local school students prepare for STEP examinations and interview preparation, contributing to the *York Festival of Ideas*, and giving talks to the York Experience Summer School. The staff involved in these activities have been largely male, and to a great extent those with young children, and hence perhaps more a direct interest in such activities.

Five members of staff, including Dr Julie Wilson, are STEM ambassadors. Two members of staff are the departmental contacts for the Further Mathematics Support programme, which aims to make further mathematics A-level available to students in schools where it is not normally taught.

Other than an allowance for being Schools Liaison Officer, as explained above, the Contribution Model does not account for external activities such as these, but it is addressing this deficiency.

We are considering outreach activities that might be particularly useful for girls (Action 2.1). The department now has several young women on its staff, who we hope might provide positive role models for girls.

At a higher level, Professor Reidun Twarock has been LMS public lecturer in 2008, and has given public talks at the Bonner Wissenschaftsnacht in 2008 and at the Cambridge Science Festival in 2011. Her work was showcased at the Grand Science Tour in York in 2012. She has moreover given a talk at the Florence Nightingale Day at Lancaster University in 2013, an event to encourage schoolgirls to opt for a career in Mathematics.

The Department has sponsored two students, one female, to audition on the TV Programme 'Hard Sums'.

## Flexibility and managing career breaks

The department has a policy of granting unpaid leave where requested and where possible. The case study of Dr Everitt is not unique.

(a)

### (i) **Maternity return rate**

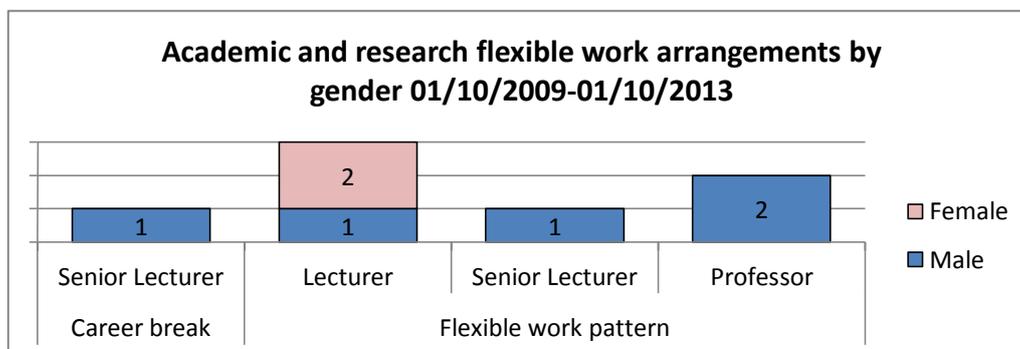
No academic or research staff have taken maternity leave.

### (ii) **Paternity, adoption and parental leave uptake**

There has been three instances of paternity leave over the last three years, one at lecturer and two at senior lecturer level. This uptake reflects the age profile of staff – it would probably not be expected that many very senior people (who in mathematics tend to be in mid 40s at least) take paternity leave.

### (iii) **Numbers of applications and success rates for flexible working by gender and grade**

Seven applications for flexible working were made during the period 10/10/2009-01/10/2013, all citing caring commitments. They were all successful.



### (iv) **Flexible working**

Most applications received relate to child care commitments. For example, academic staff request their teaching duties to be timetabled between approximately 1000-1600 hours to allow drop off/collection of children from school - the actual requirements are formally fed through to the Timetabling Office to ensure the member of staff's timetable is scheduled/amended accordingly. Flexible working requests are dealt with the HoD and Department Manager. They are normally processed via the formal system administered by the Human Resources (HR) Department. Informal arrangements are agreed where it is a temporary or ad hoc arrangement. Full details (policy and forms) of the formal system are available on the HR website. A record of the agreement (authorised by the HoD) is kept in the member of staff's personal file. Requests are normally agreed where possible.

New staff are made aware of flexible working arrangements during the recruitment process and within their letter of appointment issued by the HR Department.

### (v) **Cover for maternity and adoption leave and support on return**

As indicated above, there have been no instances of maternity leave amongst academic staff. However, with a new influx of staff we will formalise a package that would keep colleagues 'in the loop' whilst on leave, provide a 're-introduction' on return, and guarantee a reduced teaching load for the first year after that return (Action 6.2).

## **5. Any other comments: 500 words (currently 464)**

Having identified one of the critical 'drop off' points in female participation to be from Master's level to PhD level, we surveyed our Master's students in early 2013. We asked students whether or not they had thought of taking a PhD in mathematics, what they perceived to be the barriers to doing so, what might encourage them in this direction, and whether there were any gender related issues that they perceived, whether at York or in the wider mathematical community.

Thirty students responded to the survey. The results were inconclusive, with no strong feeling that there were extra difficulties in the way of female academics emerging, nor that York was not 'female friendly'. What was striking that only two students were aware of the Athena SWAN process or of the University's Bronze Athena SWAN award. One or two students made comments concerning lack of mentors and role models, which is certainly a concern (Action 4.4).

The SAT considers that the survey was the first time that, in spite of the discussions at University level, students in this department were actually asked about the difficulties they might face. We will consider a redesign of the survey for the coming academic year, with a possibility of polling penultimate year Integrated Master's students, as well as those in their third year (Action 2.2). Certainly we will do more to advertise our LMS/GPS and Athena SWAN activities (Action 5.7).

**Some final remarks** We would like to emphasise that we are at the beginning of a process which will take time and goodwill to come to maturity. Frankly speaking, the members of the SAT feel that, by and large, the Department is genuinely 'on board' for this process, with the Head of Department being strongly in favour and other senior figures championing it. We are proceeding via collegiate ownership of this process, without which it will not succeed. Athena SWAN/LMS GPS activities are a standing item at Staff Meetings, and the Departmental Management Team must approve our activities. The SAT perceives that the origin of some of those difficulties that affect all, but women in particular, arises in a large part from the extremely competitive environment in which UK academics are living. The demands of the REF and the relatively new arrangements for undergraduate finances are changing the landscape in which we work to one that is ever more competitive and taxing. It is against this background that Universities and Departments are aiming to alter the landscape by tapping the potential of women scientists - we recognise that this will require dedication and time – but is crucial for us to move forward as a 21<sup>st</sup> century department. The achievement of a Bronze Athena SWAN award will certainly help us maintain momentum in this vital direction.

## **6. Action plan -attached.**