



WORK ALLOCATION MODELS

A report by the Athena Forum

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Foreword

The Athena Forum was established in 2007/8 as an independent committee to provide an expert voice on issues of women in STEMM (Science, Technology, Engineering, Mathematics and Medicine) and to facilitate exchanges between professional bodies and other organisations and stakeholders with an interest in academic STEMM for the development, dissemination and implementation of good practice for women in STEMM employment in higher education and research (full terms of reference can be found at athenaforum.org.uk). More recently, the Forum has agreed to expand its remit to include further areas of diversity.

Membership of the Forum comprises representatives from the following professional bodies and learned societies: The Royal Society; The Royal Academy of Engineering; The Institute of Physics; The Royal Society of Biology; The Royal Society of Chemistry; The Inter-Academy Panel; The Academy of Medical Sciences; BCS, The Chartered Institute of IT and The London Mathematical Society.

To date, the work of the Forum has focussed on factors affecting women's employment in STEMM higher education and research. This report examines one of these factors – work allocation models used in UK university STEMM departments. This report analyses evidence gathered about the nature of these models, what they include and how they are used, based on a survey of these departments, to reveal good and poor practice in this area. The Forum hopes that highlighting the good practice described here will support the work of all those employed in UK higher education and research institutions, both men and women alike, and help the continued development of a supportive and transparent culture across the sector.

I would like to thank co-authors Jennifer Dyer and Eugenie Hunsicker for their valuable input into this report.

Liz Whitelegg
Chair of the Athena Forum

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Executive Summary

This report is based on a survey undertaken by the Athena Forum of 1087 UK university STEM departments about the practice and use of Work Allocation Models (WAMs). The results of the survey are supplemented with some qualitative evidence from the IOP's Project JUNO scheme, Athena SWAN submissions and the Athena Survey of Science, Engineering and Technology (ASSET, 2016¹). Key indicators of good practice revealed by the survey and associated evidence relate to the nature of the model, how and by whom it is implemented, and how it is disseminated to staff. Based on this work the Athena Forum recommends that institutions seek to adopt good practice by developing WAMs that contain:

- Transparency (i.e. outcomes disseminated to all staff, highlighting overload).
- Flexibility
 - containing broad recognition of tasks (e.g. outreach, citizenship etc.)
 - having the ability to balance of workload across years
 - capability to review of allocations during the year (e.g. quarterly) including the ability to add new roles
 - inclusion of research, but at a capped level
- Appropriate granularity (the best models are not too fine grained).
- Consideration of individuals
 - including automatic additional allowances for parental leave, returners and new staff
 - with the ability to audit bias (e.g. gender bias)
 - including account taken of individuals' preferences and skills
 - by giving staff ownership of workload.

This survey suggests that models in which all results are disseminated to all staff, either anonymously or not, are viewed as significantly and substantially fairer than those systems in which only individual data or no data is disseminated. To gain further robust data in other dimensions we recommend a more comprehensive survey be undertaken.

¹ ASSET 2016 can be found at <http://www.ecu.ac.uk/wp-content/uploads/2017/10/ECUs-ASSET-report-November-2017.pdf>

Introduction

The Work Allocation Model (WAM), sometimes also called the Work Load Model, is now used in many UK universities to organise the allocation of staff to teaching, administration, management duties and sometimes the time spent on research. There is no one standard model for these systems, they have been developed and are operated by each institution and often by each department within an institution separately, based on their own requirements. By undertaking an examination of the different models used in STEM departments, the Athena Forum aims to uncover good practice and reveal any negative associations with WAMs to improve the operation of these models throughout the sector.

A survey of STEM departments in the UK was undertaken in October 2016. The results of the survey were supplemented with qualitative evidence provided by the Institute of Physics from 17 JUNO Champion departments, extracts relating to WAMs supplied by the Equality Challenge Unit from Athena SWAN submissions and key findings from the ASSET 2016 survey. This additional evidence was used to add further confirmation and depth to the survey results.

The survey was administered using SurveyMonkey. It consisted of multiple choice questions with open-ended comments requested for additional information. The Royal Society sent emails containing a link to the survey to 1087 Heads of HEI STEM departments on 30 September 2016. Responses were requested by 31 October 2016.

The survey resulted in 265 responses giving a total response rate of 24%. 172 of these responses were complete and 103 included a contact email from which it was possible to determine the returning department and institution. This shows that the responses came from departments in a wide range of STEM disciplines as well as from institutions at a wide range of ranks in the Times 2017 ranking of HE institutions.

Survey methods

The survey consisted of 25 multiple choice questions, with a mixture of 16 single response and 6 multiple response questions, plus open-ended comments in 10 questions.

The only questions answered in common by all incomplete respondents were regarding the existence of a WAM and the role of the respondent. These were the only questions with required responses. Thus, two separate datasets were created from the total data; the first included all responses for those two questions and the second included responses for all questions from the complete surveys. This report considers the responses for complete surveys i.e. the responses from 16% of those surveyed.

The quantitative response data (multiple choice, select all that apply, yes or no or Likert type data) was downloaded from SurveyMonkey and coded for analysis in R (a programming language for statistical analysis). Specifically, in questions 4 (who records work), 5 (what tasks are included) and 12 (what determines tariff for research), in which respondents were asked to select all that apply, each response chosen was coded as Y. Responses that weren't chosen were coded as N.

The open-ended comments were analysed independently from the multiple-choice responses to reveal any contradictions with the quantitative data and to add further depth to the quantitative results.

Survey results

81% of departments responding to the first two questions (both complete and incomplete surveys) indicated that they use a WAM. Two-thirds of those who did not currently use a WAM had plans to do so. All 172 departments completing the remainder of the survey use one. Of these departments, 56% used a WAM at department level, 24% used one at school level, and 20% used one at a university level. It is worth mentioning here that the labels 'department' and 'school' are used interchangeably in the sector.

Work allocation is most commonly undertaken annually, usually by the Head of Department (HOD), but in some cases by a line manager who isn't the HOD, by staff themselves or by administrative and secretarial staff, leads/coordinators of teaching, education, research, programmes, modules or small working groups who are assigned this responsibility by the HOD. IT systems are frequently used to generate data from timetables. Human Resources rarely undertake this task.

Comments suggested that in some cases, review and subsequent adjustments are undertaken through the year to take account of changing circumstances.

Tasks and tariffs included in the WAM

158 out of 172 departments (92%) use some version of a tariff system. These tariffs are based on a mixture of actual and notional hours using standard tariffs with fixed and variable elements, some set at university level, others at department level. In 51% of cases, contact hours are weighted differently for different types of teaching depending on, for example:

- class sizes
- whether new to teaching
- evening or daytime lecturing

- credits
- effort
- responsibility.

The survey asked whether the list of tasks in Figure 1 was included in the WAM. With the exception of leadership roles, the most commonly included tasks relate to undergraduate or postgraduate teaching.

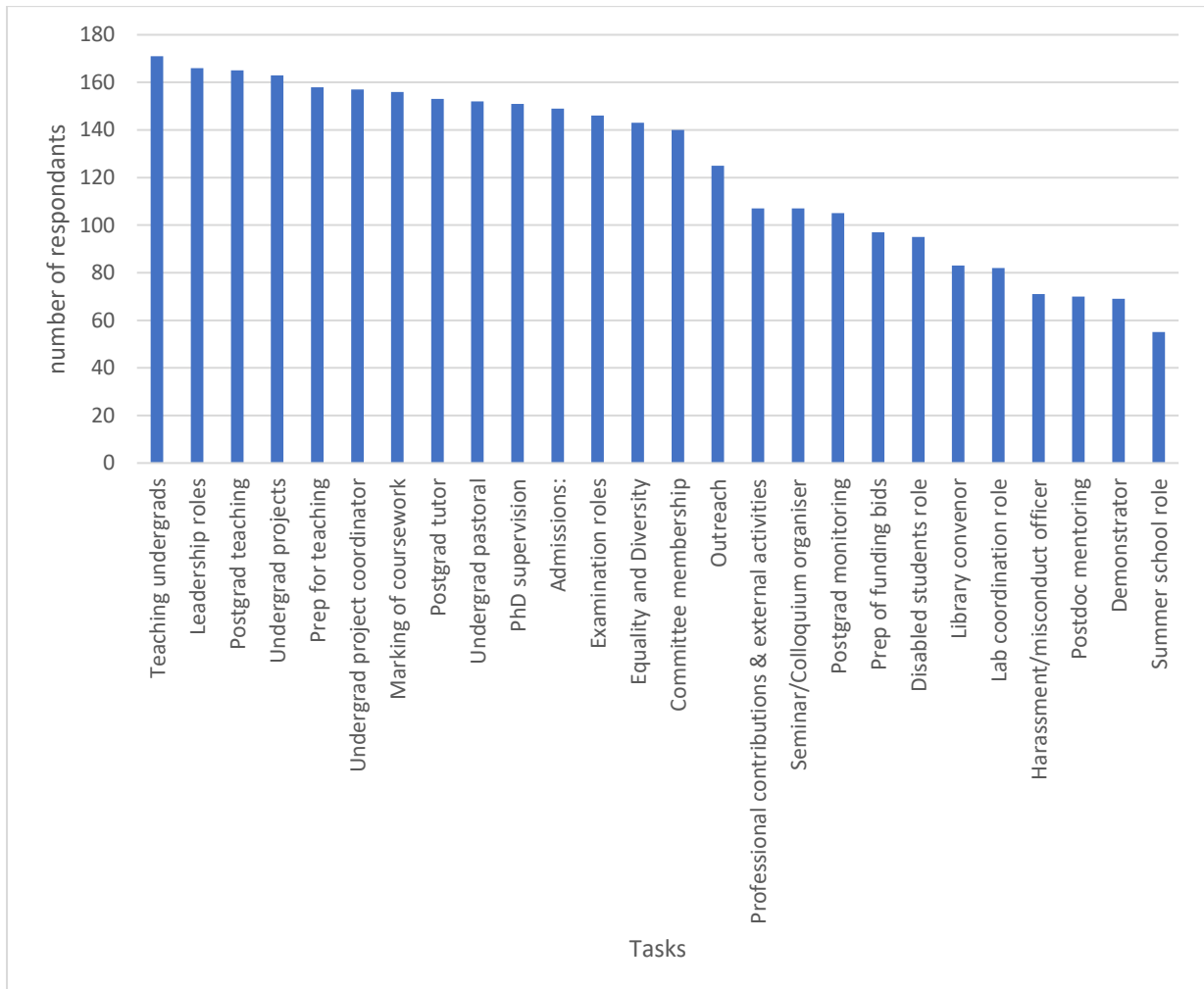


Figure 1: Tasks included in the WAM against frequency of response

The list below gives a range of other tasks that were added but hadn't been specifically listed in the survey. All were noted only once or twice so most commonly-used tasks had been included in the survey's listing. (Some were the same as those listed in the survey but were called something else or were included in the list but not noticed by the respondent.)

- Research administration, scholarship & supervision of research groups.
- General administration up to 2 hours, other managerial tasks.
- University-wide roles.

- Quality work.
- International work.
- Business development.
- Open & admission days.
- Ethics committee work.
- Careers & employability.
- Marketing, website & publicity, social media.
- Academic malpractice.
- Student society liaison.
- Health & safety officer.

Other factors taken into account in the WAM but not given a tariff, included knowledge transfer and consultancy, potential to submit to the REF, and contribution to the discipline (e.g. impact-related activities, invited talks).

The open-ended comments indicated that a multiplying factor is often applied to the tariff. Lectures are frequently given a higher weighting than labs, tutorials and project supervision because they require more preparation time. A further multiplier is also given to staff teaching new lecture courses and to probationary staff. This weighting may also vary with degree and credit level with more teaching hours allocated for higher level courses and postgraduate teaching. Tutorials that are repeated with different groups, and labs are often only given contact hours.

Examples given of variable weighting were given as:

- between 1.3 to 4 hours per standard lecture hour. Many examples were given of multipliers in this range being applied
- between 10 to 13 hours per new lecture hour. Many respondents mentioned increased weightings for new lectures but only a few quantified these. (Athena SWAN data indicated that in some departments early career academics were allocated twice the standard amount of preparation time)
- 1.2 to 3 hours per tutorial hour. Most said that only new tutorials attracted a weighting, but a few mentioned a multiplier in this range for existing tutorials
- 1.2 hours per existing lab hour. Most lab sessions did not attract a multiplier, but occasionally new labs were given additional preparation time
- postgraduate teaching may attract a multiplier, an example of 1.3 was given.

Research allocation

Research is included in 81% of the WAMs of the 172 departments/schools responding. It is determined exclusively by a fixed tariff in only 9% of these, and a set of factors in 40%. In the remaining 40% of cases it is determined as a combination of a fixed tariff and other factors with grant success leading to research active staff being bought out of other activities. (12% gave irrelevant answers or did not respond to this question.) Of those who

had a fixed tariff for research, some quoted examples of 20-30% of time allocated to each member of academic teaching and research staff regardless of the factors listed below or whether they hold a grant or not. Data from the Athena SWAN submissions also supported this equal allocation model. Potential to submit to the REF also influences research time allocation in some institutions. Athena SWAN data suggested that new staff are given an extra allowance for research in some departments.

The other factors determining the research allocation were:

Factors	No. of responses
Numbers of PhD/PDRAs supervised	69
Research income	66
Grant success	58
Number of outputs	38
Grant applications	36
Quality of outputs	28
Rank	11

Figure 2: Factors determining research allocation

Juno Champion departments were specifically asked if they included or excluded research in their WAMs. Reasons given by JUNO Champion departments for excluding research included the fact that all staff did research differently and in different amounts so it is difficult to quantify or establish a metric for it and that research metrics were part of promotion and remuneration so there is no need to include it in the WAM. The Champion departments that included research generally capped contributions to prevent 100% buyout from teaching. One department which did not cap research admitted that there is awareness that where someone is running large research groups supported by large grants, they could do much less teaching than other members of the department.

Opinions of the WAM

Several respondents gave informal evidence that staff viewed the use of a WAM positively or at least an improvement on previous (informal) systems for allocating workload. Most complaints were about the level of tariff allocated to teaching activities leading to staff feeling overworked, and complaints about a lack of transparency. Some also expressed the view that the WAM led to a culture of counting and lack of flexibility for taking on additional tasks during the year.

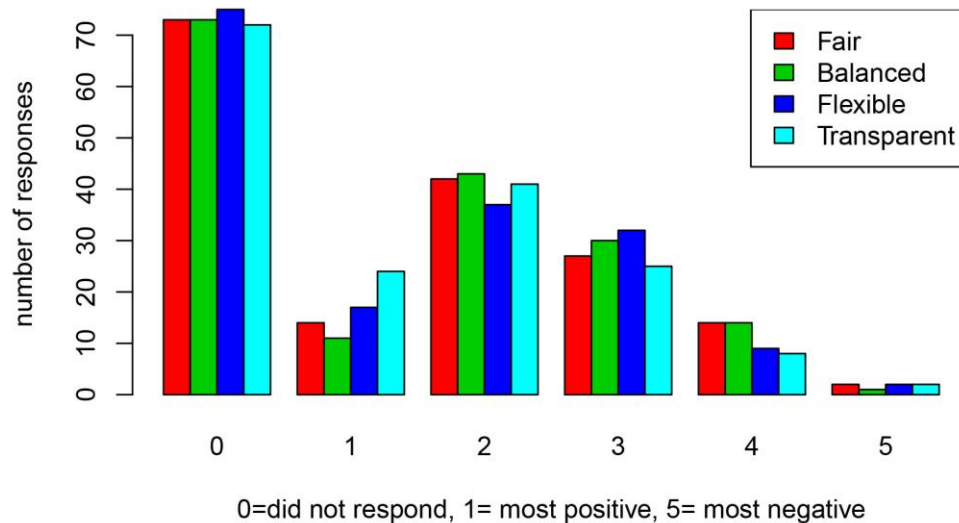
Evidence from the ASSET survey shows that opinions of gender bias in work allocation were dependant the gender of the respondent. Some women thought men were advantaged in the allocation of tasks relating to professional development and markers of esteem and other evidence showed that female respondents had more teaching, administrative and pastoral responsibilities compared with male respondents. These opinions also varied according to discipline. Further evidence is needed to clarify whether gender (or other biases) are operating but it clearly demonstrates that a WAM is a useful tool to reveal whether bias is present.

In 45% of cases the tariffs are discussed and agreed by everyone they affect. In 37% of cases the tariffs are set by senior management. In some cases, the work allocations are made available beyond the department, but the majority are not. 47% of departments share individuals' work allocations between staff so everyone can see what their colleagues' allocation are. 16% share the allocations anonymously, with some enabling staff to assess their allocation against average allocations of colleagues (broken down by grade and gender in one case) or against an anonymous summary for the whole department. 28% of departments keep the allocations confidential to each member of staff and 9% did not reveal the allocations or were not sure of the answer to this question. For the majority (69%) of cases, the reasons for reduced work allocations for some staff are not made publicly available.

The majority of staff are sent their allocation via email, access it via an online system or are told of their allocation by their line manager or HOD. The allocations are nearly always discussed at appraisal/performance review meetings with individual staff or meetings with HODs/line managers. Annual away days provided other opportunities for discussing the allocations. There were a few comments stating that the allocations weren't discussed and that work was 'just given out'.

Feedback was collected on the WAM annually in 64%, biennially in 2% of cases but in 28% of cases it was rarely or never collected. (5% did not know.)

Figure 3 indicates the results of feedback on the fairness, balance, transparency and flexibility of WAM where it was available.



Figures 3: Feedback on fairness, balance, transparency and flexibility of WAM

The similarity of shape for each distribution suggest that these four responses may all be measuring some general level of happiness with the WAM and are not actually distinct properties. This was tested using confirmatory factor analysis in the lavaan package in R, which supported this hypothesis (Comparative Fit Index of 0.995, where >0.95 is considered a good fit).

These four responses were compared to four different aspects of the WAM and it was hypothesized that these factors might influence staff's opinion of the WAM. These aspects were:

- At what level was the WAM implemented (department, school or university level)?
- Who was involved in discussions of the WAM (everyone, senior staff, nobody or unsure)?
- How are the results of the WAM disseminated (results for everyone are disseminated in anonymised form, results are disseminated with names, only own results are given to individuals)?
- Is research included in the WAM (yes or no)?

The following general trends were noted:

- Responses were more positive when the WAM was implemented at the departmental or school level than when it was implemented at a university level.
- Responses were more positive when everyone was involved in the WAM development than when they were not.

- Responses were more positive when all results were disseminated in either anonymised or named lists than when each individual saw only his or her own results.

Using a WAM enables work allocation outcomes to become transparent. This is mostly interpreted as enabling each member of staff to compare their own allocation to the average/median for the rest of the department on a task by task basis, and additionally by gender and grade in some cases. Some comments criticised complete transparency (using named lists that attributed all the work allocations by name to each member of staff) for the potential to reveal individuals' personal circumstances.

- Responses were slightly more positive when research was not included in the WAM.

Models that included research time sometimes shared it on an equitable basis amongst all academic staff (who had teaching and research contracts) and this was generally favoured. The departments that allocated research time outside the WAM, allocated more teaching to those without grants/students and this was seen to disadvantage young/returning staff who needed time to build up their research.

The survey results suggest that there is inconsistency between the qualitative and quantitative data over the inclusion of research in the WAM. Evidence from JUNO Champion departments suggest that the inclusion of research is valued, but it should be capped to prevent 100% buy out from other duties, particularly teaching.

The influence of these characteristics on ratings of fairness, balance, flexibility and transparency were then investigated using multiple linear regression. The only statistically significant trend at the 5% significance level is the relationship between perceived fairness and the way in which results were disseminated, with systems in which all results were disseminated, whether with or without names, viewed as significantly and substantially fairer than those systems in which only individual data or no data was disseminated. However, the lack of significance in other results relates more to the numbers of responses compared to the number of variables being studied. Lack of significance shouldn't be taken to indicate a lack of effect, just that there is insufficient data to examine that effect fully. For this reason, this work should be seen as a preliminary study that is aimed at generating hypotheses and an overall view of WAM rather than a carefully crafted study to test any particular hypotheses.

Examples of good practice

There were similar numbers of examples of good and poor practice cited and these were often dependant on the nature of the model, how it was implemented, by whom and the way it worked.

The best models have the following features:

- transparency
- flexibility
- not too fine grained
- broad recognition of tasks (e.g. outreach, citizenship etc.)
- ability to balance of workload across years
- review of allocations during the year
- automatic additional allowances for parental leave, returners and new staff
- ability to audit bias (e.g. gender bias)
- account taken of individuals' preferences and skills
- giving staff ownership of workload
- highlighting of overload.

Departments that operated models that could smooth workload out over several years to account for heavy teaching loads in one or two years or large one-off activities to be counterbalanced in following years were found to be offering good practice. The best practice found in JUNO and Athena SWAN submissions used models that had three-year and five-year averages and those that rotated roles carrying high workloads every three years, followed by a release from significant administration work or sabbaticals. Some models operated for a maximum period (e.g. 5 years) at which point they were then revised. Good models also reveal pinch points in the year which can be accommodated by, for example, revising the allocations or by employing more hourly paid staff. Good practice also recommends a regular review (e.g. quarterly) of the work allocations to promote flexibility during the year and avoid prescription.

92% of models automatically included an additional allowance for career breaks and for new staff. This was criticised when this allowance had to be covered by already overburdened colleagues.

A positive feature of some models was that they enabled monitoring of any biases in the allocation of work. 51% of responses said that they had already or were planning to test their WAM for gender bias. Evidence from JUNO and Athena SWAN submissions confirmed this finding with about half of 17 JUNO Champion departments already testing their models for gender bias. This is now a requirement for JUNO Champion submissions and Athena SWAN asks how and to what extent the work allocation is monitored for gender bias.

Development of WAMs has led to the recognition of tasks beyond teaching, administration/management and research to enable formal recognition of outreach and citizenship and other roles of value for the department. The best WAMs are flexible enough to accommodate new roles during the year.

Good models also used allocations that take account of the preferences and skills of staff, giving staff responsibility and ownership of their own work allocations. They provide an opportunity for an open discussion of their role allocation and use of their own judgement.

Examples of poor practice

Negative features of using WAMs were described as:

- too rigid and crude
- not flexible enough to accommodate changes
- promoting a 'bean counting' approach
- encouraging laziness in staff
- overly dependent on who implements the model
- unable to take account of differential working speeds
- disruption of model due to student factors
- university not responsive to repeated overload.

Models that were too fine grained were criticised for encouraging a 'bean counting' approach used by some staff to avoid being allocated to core duties, resulting in a loss of shared endeavour. Others felt that the models restricted flexibility for the development of new roles/tasks during the year. Some universities refuse to accept a work allocation that is overloaded and return it to the department for remedial action.

In contrast, some departments felt that the model can result in inefficient teaching and laziness because staff take different times over similar jobs, but this may not be due to the staff themselves but other circumstances. Students also display preferences for some lecturers over others, particularly regarding pastoral care, which was difficult to incorporate into the work allocation.

Negative views about the WAM felt that it imposed too rigid a structure over work allocation, provided too crude a description of staffs' contributions, caused strife and was used as a management monitoring tool.

Conclusions and recommendations

The results described above suggest that most universities operate a work allocation system based on a model with agreed tariffs covering a large range of tasks, but there remain some who have yet to implement a model. Models vary considerably in how and by whom they are developed, what they cover, the frequency of their use, how the outcomes are disseminated and who implements them. How good they are and how staff feel about these models is associated with these range of factors. Staff preferred a WAM to be used over informal systems to plan their workload and welcomed the opportunity to be involved in the development of the model and the value of the tariffs. Most models were implemented by the Head of Department and relied on tariffs being allocated to each task. Tariffs were frequently weighted according preparation time required and whether a course was being taught for the first time. Research was included in most WAMs, in some cases using fixed tariffs that gave all teaching and research staff some research allocation. Otherwise a combination of fixed and variable tariffs was used with the variable amount depending on a range of factors such as grants held, PhD students supervised etc. Some institutions capped research time so that staff were not completely bought out from teaching and this was considered to be good practice. Messages about the inclusion of a research time are not entirely clear, although not statistically significant the survey indicates that staff feel it is fairer not to include research time but comments from JUNO Champion departments indicate that inclusion of research time is valued. Further evidence is needed here.

Good models enable smoothing of workloads across years and reveal pinch points in the year when hourly paid staff can be brought in to help alleviate overload. They also have an automatic allocation for career breaks and for new staff. Some criticisms of WAMs are that they can lead to a culture of counting of tasks and a reluctance to volunteer for new tasks, they are inflexible and too dependent on who implements the model.

Despite some criticisms, the evidence presented here leads the Athena Forum to the conclusion that WAMs offer the fairest way of allocating work to staff, although some models are better than others. The following recommendations are offered as good practice:

Recommendation 1

The outcome of the implementation of the model should be transparent to all staff, so that staff can compare their allocations against their colleagues' allocations, either anonymously or not.

Recommendation 2

The WAM should be flexible enough that it can accommodate new tasks during the year.

Recommendation 3

It should not be too fine grained and avoid a counting culture that can lead to a lack of responsiveness to new tasks.

Recommendation 4

The model should include a broad range of tasks, including for example outreach, citizenship and diversity work.

Recommendation 5

It should include the ability to balance workload across years and to review workload within years to highlight overload.

Recommendation 6

Automatic additional allowances for parental leave, returners and new staff should be built into the model.

Recommendation 7

Staff should be given ownership of the model and account taken of individuals' preferences and skills.

Recommendation 8

The model should facilitate auditing of bias (e.g. by gender)