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Communicating gender statistics

Science Slams – new concept for presenting gender statistics

Note by Federal Statistics Office Switzerland*

Abstract

‘Science Slam’ is a relatively new, popular science communication concept of presenting research topics in an entertaining and comprehensible way. Scientists have to explain their projects in 10-minute talks and may use visual and other aids, like presentation software, acting or live experiments during the performance. The event is organized as a competition and the audience chooses a winner. Originally organized by University groups, Science Slams increasingly serve as edutainment at scientific conferences and science-related public events.

As gender statistics findings usually reach only parties already interested in the topic, the authors try to raise awareness of the results of their investigation on equal employment opportunities at university level in Switzerland. The results of the Federal Statistical Office concerning the groups ‘students’, ‘research associates’ and ‘professors’ at Swiss universities since 1980 show that, despite positive developments, gender equality has not yet been achieved. While the percentage of students and graduates demonstrate that, on average, equality in access to university education has been reached, we find a substantial (50%, to less than 25%) drain in female academics at non-professorial teaching staff level and, even more pronounced, at the level of professors.

The authors’ talk will outline experiences with this concept so far: During participation at five Science Slam events, they obtained feedback that this kind of presentation on gender statistics is an uncommon way to confront an audience with this interesting and important topic. Moreover, it gives the opportunity to explain the underlying context for, statistics that is necessary for understanding the advantages of equality.

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I. Introduction

1. For centuries, that prevailing gender inequality would remain a status quo was taken for granted, as it was inscribed into law and upheld by tradition. However, a shift that would diminish such certainties and see women increasingly win and receive equal rights in more and more countries materialized in the 1960's and 1970's. Along with this development, it became clear that in addition to laws, there were also practical obstacles in daily life which prevented equal opportunities for women. In an attempt to gain a broader, more international understanding of the issue, the 'World Conferences on Women' were organized. While the first two conferences in 1975 and 1980 only concerned statistics regarding women and did not allow comparisons to the male population, the third World Conference in Nairobi in 1985 included statistics on women as well as men and marked the start of the development of national systems whose aim was to inform citizens. With these statistics it became possible to fulfil the demand for data to establish policies and programmes aiming to deal with the disadvantages faced by women. ([1], p.409)
2. Notwithstanding these efforts, gender statistics were still often produced as mere supplementary topics to more robust issues, thus marginalizing them and resulting in failure to reach a broader audience. This lack of dissemination meant that decision bodies and policy makers were left with little knowledge or understanding of gender issues for far too long. A more efficient data collection and analysis of gender related topics finally resulted from mainstreaming the gender perspective in the national statistical systems. ([2], p.5)
3. Gender equality is a value in itself. Not only is it a moral and ethical issue, a key component in human rights and social justice, but it remains a crucial economic factor as well. Women's lack of education has a significant impact on all levels of human life. Less education limits opportunities not only for employment and earnings, but also for higher positions of power and decision-making. Moreover, a low level of education influences a family's wellbeing, i.e. the health status of the women and the members of their household, especially of their children, is often much lower ([2], p.25, Point 82).
4. According a recent McKinsey study [3], worldwide economic output would be 26% higher if gender equality would be achieved in all countries by 2025. Based on developments in recent years, a time horizon of decades or even up to a century seems to be more realistic than say within the next couple of years [4]. What's more, the gender gap is even growing once again. In a time when societies cannot afford to abandon the capabilities of half their population, we are witnessing a step in the wrong direction.
5. Societies can see greater gains if they allow their population to develop in an optimal way. In the best case no individual should be hindered or given preference based on attributes that are out of his or her control, especially if these individuals make up half the population. Even in countries with currently high levels of equality, the achievements need to be constantly monitored and promoted in order not to decline [4].

A. User Types of (Gender) Statistics

6. Similar to other statistics, gender statistics have to respond to the needs of various user types. Wood ([5], p.137) categorized potential users of publically available statistical data into different types named 'tourists', 'farmers' and 'miners' (see also [6], p.11).

7. Under Wood's account, 'tourists' are interested people who search for information for their formation of opinion in a working or socio-political context, out of private curiosity or for educational means. This type of user utilizes statistical information infrequently and unsystematically and can be found mostly within the media and the public. 'Tourists' prefer easy and fast comprehensible visualisations of the data and, if available, short and comprehensible explanations.
8. The user type 'farmer' comprises decision makers who are mainly specialists or methodical generalists (e.g. politicians, legal professionals, and other advocates), who use statistics and studies for their decision making or for a data based reasoning in collective decision making processes. Farmers are characterized by a more case by case oriented demand for aggregated statistics. They prefer datasets, aggregated data over time, already classified as well as formatted.
9. The user type named 'miners' are specialists or experts who collect, search, assemble and prepare data professionally and routinely for certain projects or in order to inform decision makers and integrate them in applications, reviews or reports. This user type continues processing raw data and often consists of researchers and analysts.

B. The Tasks of Gender Statistics

10. The level of awareness about inequality can be measured at events like the 'International Women's Day' and 'Equal Pay Days'. There have been women protesting for over half a decade for gender equality and it is not surprising that they participate with placards saying: "I can't believe I still have to protest this [explicit]" [7].
11. However, for a sustainable change toward more gender equality the adaptation needs not only to be made on the policy level (the 'farmers' of gender statistics) but in the minds of the individuals of the population, of which only a small proportion consists of 'tourists' in gender statistics. To reach the objective of increasing statistical literacy and raising awareness of persisting inequality between men and women in most fields of socio-economic and public life, more 'tourists' in gender statistics within the population are required.
12. Gender statistics concerns all genders. Reaching a broader audience is essential to change stereotypes and for the rebalancing of the roles of all genders. Statistics on gender helps to support "a new gender balance in the distribution of roles within the family, at the workplace and in positions of decision-making" ([2], p.3, Point 8). It is crucial to indicate that the objective of equality is not based on the idea that all genders are the same or are forced to do the same activities. The purpose is to facilitate opportunities, rights and responsibilities independent from gender. This goal includes the interests, demands and preferences of all genders. ([2], p.3, Point 10)
13. The aim to integrate gender equality into societies and individuals' lives with positive long-term effects requires comprehensive communication styles while sharing such information with the population. Besides the necessity of coherent national strategies and action plans for an overall vision and strategy for inclusive, gender sensitive, and sustainable development ([8], p.11), it is important not to see it as an extra issue that can be dealt with after 'so-called real' problems are solved and it is crucial to avoid the perception that the topic is a philosophical, and therefore a superfluous, problem for only rich, idle nations with few other issues. It is found in the heads of individuals of every race and socio-economic class, in every part of the world, and leads to real human suffering.

14. Besides the importance of understanding how all genders respond to socio-economic and policy transformations ([2], p.4, Point 13), it is also important to find ways to approach a broad audience to clarify that gender equality increases productivity, total national output and human capital ([9], p.6-11).

C. Gender Statistics: Influencing Factors and Perceptions

15. The production of (gender) statistics often appears like a purely technical task, which is however only true for the act of the final measurement. The process to define the choice of ‘what to measure’ and on ‘how to measure and present the outcomes’ consists of political decision steps and the results show a tendency to reflect the preferences of the decisions-makers, which might not be equivalent to the preferences of the target group, i.e. women. The different possible data collection methodologies, indicator definitions and statistical analysis techniques results in data of different nature. Alongside with political decisions and concessions, often the collected data is not adequately distributed or paid attention to ([10], p.9, Ch.2.1). Participatory practices could help to shape gender statistics which consider the priorities of the population and at the same time initiate important discussions within the population. However, participatory practices of data collection are usually more elaborate and require a minimum at statistic literacy.

D. Why Communicate Gender Statistics?

16. Gender equality benefits the entire society in socio-economic and health related matters. Without finding the means to interest all parts of the population in gender equality, and not only women’s and gender advocates, the perception that gender-centred publications and data collection concern only a subpopulation will persist. As long as the presentations fail to underline the significance of the incorporation of gender perspectives and of long-term gender equality, opportunities and efforts will be lost. ([2], p.6 Point 25)
17. To reach a broader audience, gender statistics need to highlight gender-related causes and consequences more comprehensibly and concisely ([2], p.6, Point 24). However, members of the general public are only confronted by gender statistics if they read about them in the media or perhaps if their interest gets sparked after a discussion or after reading an article. It’s therefore necessary to improve the accessibility of gender statistics to the public, especially to (potential) statistical ‘tourists’.

II. A Science Slam presentation on (Gender) Statistics

E. The Concept of ‘Science Slams’

18. The term ‘Science Slam’ is a relatively new concept since 2006 in popular science communication whose purpose it is to promote and present research topics in an entertaining and comprehensible way to a larger audience. The event locations are usually public places like bars or theatres and help to promote a relaxed atmosphere and ease of engagement. The participating scientists (the ‘slammers’) have to explain their projects in short talks with strict time limitations of ten minutes; they may use visual and other aids like presentation software, acting or live experiments (even including the audience) during the performance. [11]

19. Science Slams were initially organized primarily by research institutions and initiatives or individual science enthusiasts as stand-alone evening events. Today, they also increasingly serve as ‘edutainment’ (sometimes ‘infotainment’ or ‘scientainment’) at scientific conferences and science related public events ([12], p.90). The event takes the form of a competition with audience choosing the eventual winner, thus maximizing not only audience engagement and learning, but the incentive for the expert to get the message across in a meaningful way (Table/Graph 1).

Table/Graph 1: Slam presentation with countdown visible to the audience



20. Since its first appearance in Germany, such events have reached a broad audience, especially in German speaking countries. In Germany, currently there are more than 50 regular Science Slams - in Switzerland around five. They are often organized as standalone events for one evening with 4-9 participating slammers. The topics presented are mostly mixed and depend on the participating scientists, however may also have a specific theme (sustainability, environment, energy etc.) or feature a certain kind of participant. There also have been a few Science Slams with only female researchers that combat gender stereotypes in science and highlight successful women scientists [13, 14].
21. One reason for the success of these events is the competitive character and opportunity for audience participation. Thanks to greater responsibility given to the audience, people tend to listen more carefully, think more critically and evaluate ideas in a more profound way. The positive effect of treating the audience as the most important person in the room so that speaking cannot be underestimated. The slammers must inform, persuade and entertain them, and that makes all the difference. ([15], p.110-111)
22. Although organized as a competition, this might not be the main motivation for the scientist to participate. The Science Slam community consists of a loosely connected group of

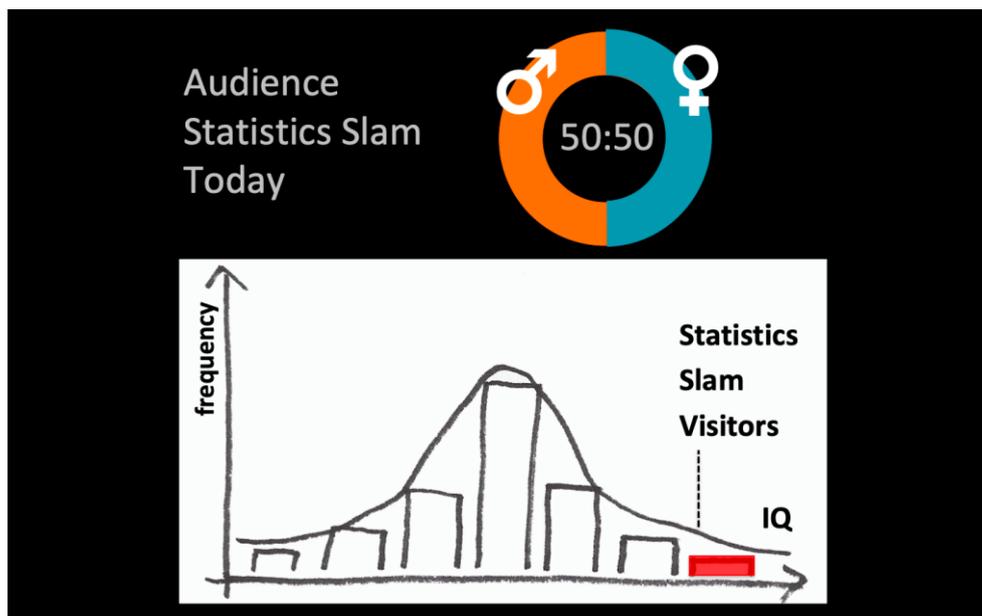
enthusiastic researchers who want to present their topics to a border audience, raise awareness for their topics and enjoy the atmosphere and myriad interpersonal interactions that take place. Such motivations can take hold of entire groups of slammers and it is not unusual that presenters become fired up to give an inspired show that transcends one's own specialization. Not only do audiences experience ideas presented in a new light, but researchers make connections over and above their normal academic discussions and engage in deep communication with one another across diverse scientific fields.

23. The audience members are diverse in interest and perspective. No research background or level of expertise is (or should be) required to follow the presentations - whose goal it is to both inform and entertain. In the best case, the audience discusses and rates the content of the presentations as well as the style.
24. Despite the diversity, a typical Science Slam audience is generally speaking rather highly educated. The sample from a study on three very different Science Slams shows that the visitors were not exclusively academic, 56% had a university degree [16].

F. Possibilities and Challenges of Science Slams

25. Time frame: With a time frame of 10 minutes, the duration of these presentations positions itself between other popular (science) communication formats like 'elevator pitches' which are usually between 30 seconds to two minutes [17] and 'TED talks', where speakers are given a maximum of 18 minutes [18]. While the time limitation does present a challenge, it also serves to maintain the concentration of the audience, not to mention motivate the presenter to deliver concise and relevant information.
26. References to the popular culture and politics: Many slammers use references to popular culture (like films and songs) or current political events to introduce a narrative to their presentation. While entertaining and engaging, references to popular culture in the best case give context which helps the audience to understand the research and its relevance. For the presentation, it is also possible to assume the role of an alter ego. Successful adaptations include the archaeologist version of the famous computer game character Lara Croft and a slammer performing as a medieval monk when presenting his results in German linguistics.
27. The use of sexist stereotypes can be very ambivalent. While the character Lara Croft might serve as a model for a powerful woman, her depiction in games and movies is overly sexual, especially in the computer game with enormous biologically impossible breasts, always very short skirts and so on.
28. In cases where the role play and the topic do not fit on first sight, a desired dramatic tension is achieved and audiences look on with rapt attention. This bit of theatrics role can facilitate the sharing of knowledge in a way that traditional speeches or slideshows never could.
29. Interaction with the audience: Since the audience at a Science Slam chooses the winner of the event, it therefore has an active role by default. In addition, many slammers interact with the audience by making it part of live experiments, or asking for opinions or to support a presentation with audio or visual signs (hands clapping / movements / sound effects after a certain signal is given etc.). Also, the audience is often involved in or the target of a joke to increase engagement and ramp up the entertainment factor (Table/Graph 2). Scientists can be funny too, and humour often creates cohesiveness in the group.

Table/Graph 2: Interaction with the audience by real-time statistics



30. There often is the problem, that Science Slams happen with very few or no women at all on stage; at the last four German Science Slam Championships in average less than 25% were female.
31. Personal presentation style: A Science Slam presentation is a specific interplay of a person's individual performance skills and knowledge and usually cannot be given by somebody else. It therefore also has characteristics of a smaller-scale art performance which also has to be rehearsed and practiced.

III. 'James Bond' with the Licence to Count: A Science Slam Presentation on Gender Statistics in Swiss Universities

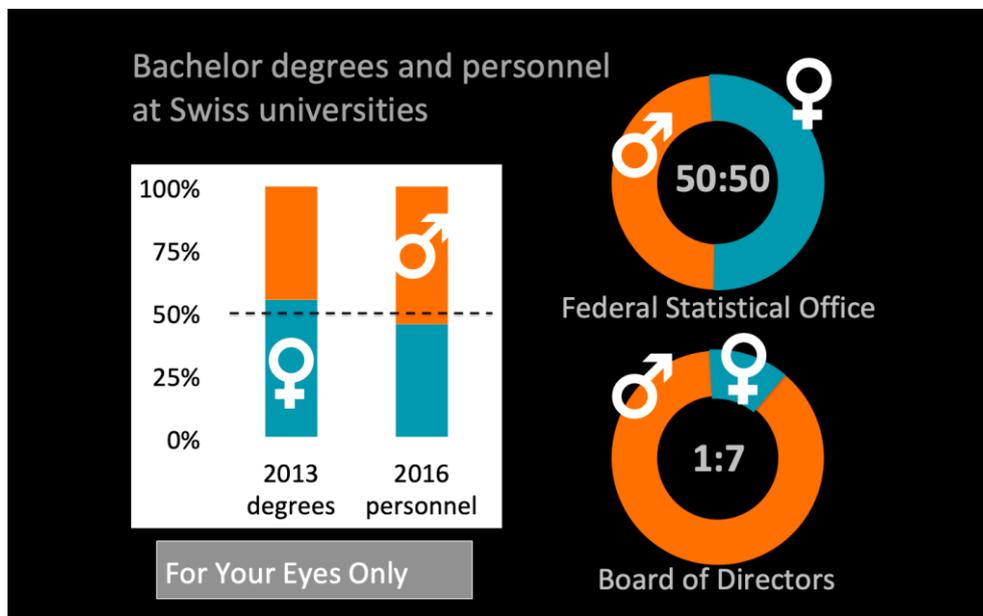
32. The Science Slam presented by us introduces the role of the Federal Statistical Office in Switzerland and informs about the political framework on how a permission to produce statistics is derived in Switzerland. The content of the Slam presentation comes from gender equality studies in Swiss universities.
33. The presenter (MA) appropriately performs in the guise of 'James Bond', who, not unlike the wise use of statistics, frequently saves the world from super villains using state-of-the-art technology. As the movies are commonly known and recognized in German culture, references like film titles help to frame and contextualize the statements given in the presentation.
34. James Bond used to be a sexist macho stereotype. Meanwhile, it got a bit better and perhaps there will be a more diverse James Bond in the future. Maybe with Idris Elba or a female James Bond? There still is work to do, but the presenter uses that as an example to see if Swiss universities are more progressive than James Bond. Presenting results of gender statistics in the role of this agent adds an ironic layer and plays with the expectations of the audience. However, like the film counterpart, the slammer in the role of James Bond feels responsible for his 'assignment': To perform democratic legitimated statistical data

collection on aspects of gender, its analysis and distribution of the outcomes in order to raise awareness and promote gender equality in Swiss universities.

G. Content of the Slam: Gender Equality at Swiss Universities

- 35. At Swiss universities, women were allowed as visitors with the right to listen to lectures from 1840 on [19]. In 1864, the Russian woman Nadezda P. Suslova, was the first female student at the University of Zurich who finished a PhD in medicine [20]. Around 1895, female students made up 10% of the total in Swiss Universities. In 1906/7, 25 % of the students were already female. Nevertheless, this temporary development is ambivalent; while female students became less exceptional, many of them were of non-Swiss origin with the necessary means. During the First World War the ratio declined to 10% and an increase of female students’ ratio above 25% occurred again at the beginning of the 1970’s. [21]
- 36. Currently, slightly more female students enrol compared to male students: At Swiss universities more women (51%) than men (49%) pursue higher education [22]. Also in programmes preparing for advanced research qualifications, such as PhDs, women currently make up almost half of the research associates. The participation of women in higher education tends nevertheless to diminish at the more advanced university levels (see the presentation at this workshop [23]), despite an increase in non-professorial teaching staff it reaches a percentage of only 25%; and for professor positions the percentage remains below 25% females [24].
- 37. The presentation terminates with a display of the gender ratio at the Federal Statistical Office in general (1:1) and at its Board of Directors (1:7), (Table/Graph 3).

Table/Graph 3: Ratio of gender distribution of students and personnel at Swiss universities, at the Federal Statistical Office and its Board of Directors



H. Feedback and Outlook

38. Until now, the Slam presentation was performed five times with differing results: At the three public Science Slam events with a usual public Slam audience the feedback (and rating) was mixed with a tendency towards being reserved. One reason could be that the topic may have touched upon a sore spot but no empirical evidence is currently available to back that assumption. Nevertheless, this would fit to one point of view from the field of sociology that one aim is to present something obvious in a new way that the result may be disconcerting at first glance [25]. The feedback was more enthusiastic at the two edutainment events during the Swiss Statistics Meeting in 2018 and the general assembly of the Swiss Statistical Society in 2019, which is an indication for a good balance between simplification and correctness of the content and framing.
39. The slammer therefore interpreted the feedback as encouraging and decided to further pursue this form of raising the public awareness on the topic, as well as saw the necessity to do so.

IV. Conclusion

40. Science Slams give a unique opportunity to put gender statistics into a societal context and disseminate them to a broader, not representative, audience that may further circulate them and serve as multipliers.
41. When it comes to the entertainment aspect, James Bond, a prototype of masculinity, advocates for gender equality and at the same time questions the self-concept that some members of the audience may have in an ironic way.
42. Putting statistics into a Science Slam presentation can serve as an appealing way to heighten interest in statistics and win over more statistical ‘tourists’.

V. Acknowledgements

43. Thanks to Philipp Schrögel, Science communication researcher and science slam organiser, for helpful conversations.
44. Thanks to the colleagues from the domain ‘students and exams’ at the Federal Statistical Office for important details on the data.
45. Thanks to Jasmin Barman-Aksözen, slammer, whom MA accompanied that often to Science Slams that one day it was almost inevitable to participate at one.

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