

Professional Awards in Statistics: Chipping Away at Gender Disparities in the USA

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Abstract

Statistical association awards are external validations of high-level individual accomplishments in statistics; they can be expected to boost careers and inspire role models within the statistics community. Evidence indicates women in the USA receive fewer statistical association awards for research and scholastic achievements than would be expected based on the numbers of women in the availability pools. Increasing the numbers of women who win statistics awards can be expected to improve the status of women in statistics. This paper aims to bring professional association awards best practices in the USA to the attention of the international statistical community. This paper will present new ideas on how to advance women in statistical association awards processes. Awards and award procedures of the American Statistical Association (ASA) will be described. Historical and current ASA awards data will be presented by gender. Availability pool data by gender from various sources will be explored. The Association for Women in Science's (AWIS) "Advancing Ways of Awarding Recognition in Disciplinary Societies" (AWARDS) project, funded by the National Science Foundation, will be described. Resources available to help improve professional society awards processes will be highlighted. ASA participation in the AWARDS project workshops will be reviewed, including recommendations of ASA representatives in, and initiatives following, the first workshop. New ideas for statistics professional awards that are informed by best practices and discussions with other science, technology, engineering and mathematics (STEM) professional society leaders at the second (most recent) AWARDS project workshop will be given in this paper.

Key Words: prizes, recognition, status of women, unconscious bias

1. Introduction

This paper aims to bring professional association awards best practices in the USA to the attention of the international statistical community. This paper will present new ideas on how to advance women in statistical association awards processes.

Statistical association awards are external validations of high-level individual accomplishments in statistics. They can be expected to boost careers and inspire role models within the statistics community. Increasing the numbers of women who win statistics awards can be expected to improve the status of women in statistics.

2. ASA Awards for Research/Scholarship

The ASA oversees the following seven awards for statistics research and scholarship (see American Statistical Association 2013b):

(1) Deming Lecturer Award: "The individual has either made significant contributions in fields related to those in which Deming devoted his career-including survey sampling, statistics in the transportation industry, quality management, and quality improvement-or

has made significant contributions through effective promotion of statistics and statistical thinking in business and industry.” This award was established in 1995. Between 2001 and 2012, twelve awards were given, and none (0%) went to women.

(2) Gottfried E. Noether Senior Scholar Award: “The Noether Award Committee selects the Noether Senior Scholar based on outstanding contributions to the theory, methodology and or novel applications to nonparametric statistics, interpreted broadly, that has had substantial, sustained impact on the subject, its practical applications and its pedagogy.” This award was established in 1999. Between 2001 and 2012, twelve awards were given, and only one (8%) went to a woman.

(3) Outstanding Statistical Application Award: “The Outstanding Statistical Application Award is bestowed upon a distinguished individual or individuals based on the following criteria: The impact of the statistical application in addressing a significant problem in a substantive field; the ingenuity and or novelty of the statistical treatment of the problem. Eligible work includes papers, monographs, reports, and other substantive evidence appearing two years prior to the presentation of the award. All nominated work must have been subject to external peer review and, preferably, to formal refereeing.” This award was established in 1986. Between 2001 and 2012, thirty-two awards were given, and five (16%) of these went to women.

(4) Samuel S. Wilks Memorial Award: “The Wilks Memorial Award is bestowed upon a distinguished individual who has made statistical contributions to the advancement of scientific or technical knowledge, ingenious application of existing knowledge, or successful activity in the fostering of cooperative scientific efforts that have been directly involved in matters of national defense or public interest.” This award was established in 1964. Between 2001 and 2012, twelve awards were given, and only one (8%) went to a woman.

(5) Statistics in Chemistry Award: “The Statistics in Chemistry Award is bestowed upon a distinguished individual or individuals based on their innovative use of statistics to solve a problem in chemistry and the impact of the solution on the problem. In odd-numbered years, the award is presented for a paper published in refereed statistics, chemistry, or chemometrics journals during the previous two years. In even-numbered years, the award is presented for work between a statistician and chemist in an industrial/manufacturing company performed during the previous two years. A statistician, to be eligible for the award, must be a member of the ASA.” This award was established in 1990. Between 2001 and 2012, twenty-six awards were given, and four (15%) went to women.

(6) W.J. Dixon Award for Excellence in Statistical Consulting: “The award is given to a distinguished individual who has demonstrated excellence in statistical consulting or developed and contributed new methods, software, or ways of thinking that improve statistical practice in general.” Between 2001 and 2012, five awards were given, and none (0%) went to women.

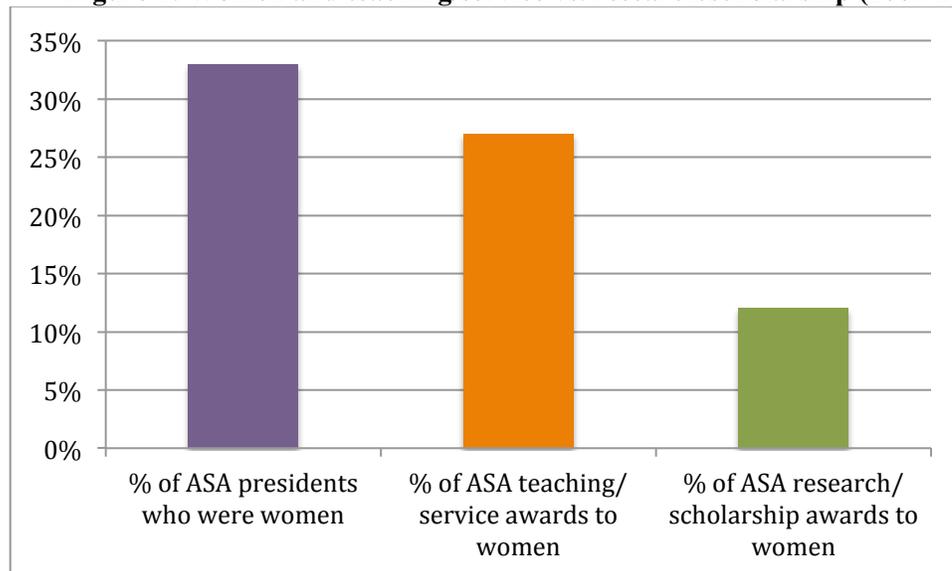
(7) W.J. Youden Award in Interlaboratory Testing: “The W. J. Youden Award in Interlaboratory Testing is bestowed upon distinguished individual(s) whose publications [in the area of interlaboratory testing] have appeared or been accepted for publication in English-language, professionally refereed journals or monograph series during the given

year or the two preceding years.” This award was established in 1985. Between 2001 and 2012, forty-six awards were given, and seven (15%) went to women.

Note that none of the seven research and scholarship awards are named after women. Also note that higher percentages of awards have been given to women when the awards are based on specific recent substantive evidence such as peer-reviewed publications.

Women in science typically do better in competitions for teaching and service awards than they do for research and scholarship awards. Of the twelve individuals who served as president of the ASA from 2001 through 2012, four (33%) were women. Also, from 2001 through 2012, forty-five awards were given for statistics teaching and service; twelve women (27%) won these awards. In the same time period, one hundred forty five statistics research and scholarship awards were given; 18 women (12%) won these awards, which is almost a third of the percentage of ASA presidents who were women, and less than half the percentage of awards for teaching and service that went to women (Figure 1) (American Statistical Association 2012a, 2012b, 2013b).

Figure 1: Women and teaching/service vs. research/scholarship (2001-2012)



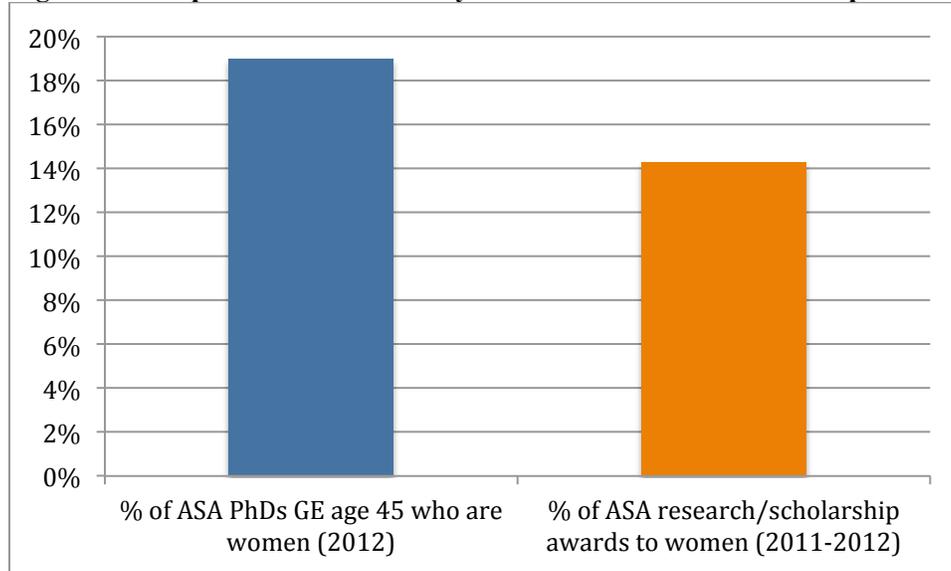
3. Availability Pools

Several availability pools (populations of individuals who are qualified to compete) have been suggested for use in assessing possible bias in the research/scholarship awards in the U.S. The entire pool of ASA members is too broad, as senior statisticians with doctoral degrees are best poised to compete for research and scholarship awards. The pool of tenured professors is too narrow, as indicated by the fact that less than half of ASA members are employed in academe. The pool of ASA members aged 45 and older who have PhDs would seem to be superior to the other two pools that have been suggested. However, it must be kept in mind that the available pool data are for the most recent year, and not all statisticians are members of the ASA.

In 2012, women comprised 19% of ASA members aged 45 and older with PhD's (Ghosh-Dastidar et al 2012). In 2011-12, 12% of the ASA research/scholarship awards went to women. This may indicate that women in the USA receive fewer association awards for

research and scholastic achievement than would be expected based on the numbers in the availability pools. This follows national trends for awards and prizes in the United States (Lincoln et al 2012).

Figure 2: Comparison of Availability Pool and Research/Scholarship Awards



4. AWARDS Project Resources

The National Science Foundation funded the AWARDS Project for 2010-2012 with the aim “to investigate and improve the process of granting awards and prizes for scholarly achievement” in STEM academic disciplines. The objective is to increase the percentage of research/scholarship awards to women.

The ASA was one of the first of eighteen professional associations to participate in the AWARDS project. Data accumulated for the AWARDS Project indicate that the ASA trends are typical among STEM disciplines (Association for Women in Science 2013a).

The AWARDS project has concluded that: “Marked gender disparities in awards have resulted in a climate that hinders the advancement of women and impairs their retention as leaders in science, technology, engineering and mathematics”. The project has postulated that “implicit associations” or “unconscious biases based on social stereotypes” are a likely explanation for these trends. The project has uncovered that, while improving the representation of women on selection committees improves odds of selecting a woman, the gender of the selection committee chair is a more significant predictor of the gender of the award winner.

AWIS was founded in 1971 to “make science a better place for women” by advocating for equity in employment and career advancement for women at all levels in STEM fields. AWIS sponsors an AWARDS Project web page that includes a project summary and various helpful resources. These include presentations given at the 2012 AWARDS Workshop, a series of educational webcasts directed at disciplinary association awards selection committee members, FAQ’s, recommendations for writing letters of recommendation, and useful references.

The webcasts include an overview of data on professional association awards and studies of implicit bias. They also include issues surrounding evaluation of awards nominees, selection of awards nominees, and improvement of awards nominee pools.

5. ASA AWARDS Activities

As a result of the AWARDS Project, the ASA has undertaken a number of activities. Specifically, the ASA has established a set of best practices for awards processes in statistics, posted them to the ASA web site, and sent them to the new awards committee chairs. ASA staff pointed to the establishment of best practices, especially for avoiding implicit bias, as the biggest success, “not just for the guidelines themselves, but for drawing leadership attention to it”.

Here is the outline of the ASA guidelines:

“Composing committees and cultivating nominees

- Appoint diverse selection committees and committee chairs.
- Generate a large and diverse pool of nominees.
- Publicize the award among underrepresented groups.
- Periodically review and discuss practices for building a pool of nominees.
- Periodically review the description and guidelines for the award.

Selecting winners

- Discuss the process and criteria that will be used to evaluate nominees *before reviewing nominations*.
- Consider including those whose qualifications are strong but whose work may be less widely known.
- Make a personal list of top nominees *before hearing the recommendations of any other members*.
- Create short lists via *inclusive* rather than exclusive methods.
- Ensure that every committee member’s voice is heard.
- Take adequate time to make a decision.
- Avoid Conflict of Interest.”

Details are posted on the ASA Awards and Recognition: Awards Committee Guidelines web page (American Statistical Association 2013a).

Also, the ASA has made the Awards and Recognitions pages more visible on the ASA web site; oriented new awards committee chairs at the ASA Awards Council meeting, held at the annual Joint Statistical Meetings, to issues in the nomination and selection processes; and used email to expand solicitation of nominations. The ASA planned to make sure biased language does not appear in awards announcements and newer disciplines are represented in the awards collection (American Statistical Association 2012c).

6. Ideas Discussed at the 2012 AWARDS Project Meeting

Representatives of the professional associations participating in the AWARDS project met in 2012 and discussed ideas focused on the mission of investigating and improving research/scholarship awards processes. Among the ideas discussed were the following.

(Composing committees and cultivating nominees) Educate awards committees about gender stereotypes. Committees should openly discuss the issue of implicit bias. Committees should undergo diversity training. Appoint more women to selection

committees. Appoint more women as chairs of selection committees. Actively solicit nominations of qualified women from eminent scholars. Add solicitation of nominations to the roles/responsibilities of association leaders. Make nomination forms look prestigious. Proscribe questions to be answered in reference letters. Provide examples of “good” nomination letters.

(Selecting winners) Ask committees to review best practices and implicit bias documents prior to meeting. Ensure that evaluation processes rely on merit by referring back to original criteria and emphasizing significance and impact of research findings. Ensure committees read the nominee’s relevant papers and seek advice from experts in the nominee’s sub-discipline. Ensure that evaluation processes are rigorous. Ensure that evaluation criteria are applied consistently across nominees. Focus on what the nominee has done rather than who or where the nominee is (Association for Women in Science 2013b).

7. Conclusion

Professional associations should continue to look for new ideas to improve professional association awards processes and to make women more visible performers in the profession (Golbeck 2012). Progress may be monitored by conducting post selection surveys, and by collecting data to use for advocacy. Efforts should be made to better define the awards availability pools, and investments should be made to obtain more specific availability pool data.

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