Results from the 2003 CSWA Survey of Astronomical Institutions

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in Astronomy

Introduction

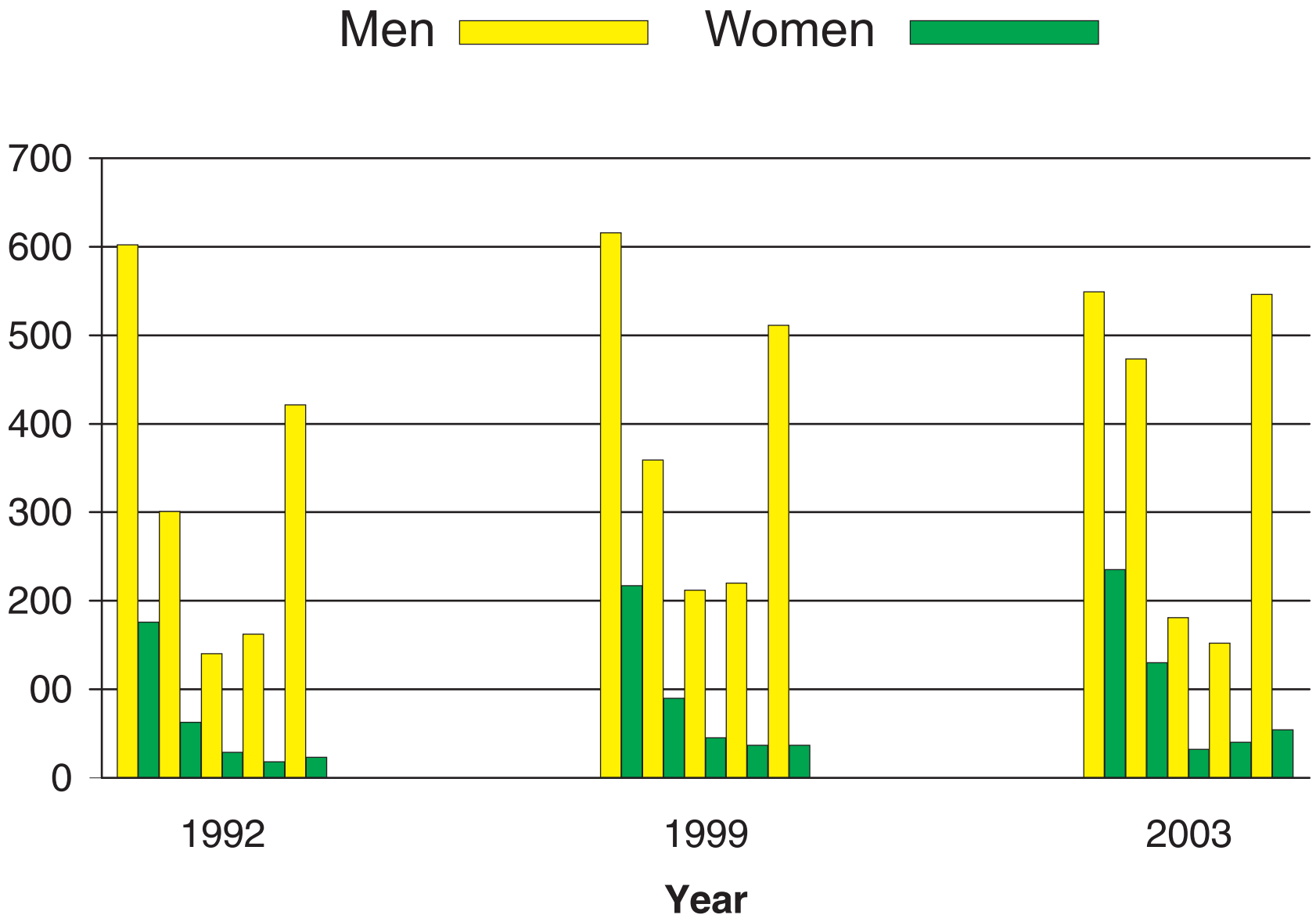
The AAS Committee on the Status of Women in Astronomy conducted surveys in 1992, 1999, and 2003 to monitor the gender distribution of astronomers at major U.S. research institutions. Data were collected and submitted by representatives of those institutions; in cases of combined physics and astronomy departments, we asked for data representing astronomers only. We present the 2003 results compared with those from previous years. These results differ from those of the AIP's similar 2002 survey of astronomy departments, primarily because the two surveys included different institutions.

Figures 1 and 2 show the absolute numbers and the fractions of astronomers who are men and women, for all three years of the survey. Rank increases to the right in these graphs; “faculty” and “research” professors are combined at each rank.

The percentage of women continues to increase with time at nearly all levels, with the largest increase at the graduate student level; 30% of graduate students in astronomy are now women. The historical decrease in the percentage of women with increasing rank persists. We also find that both the number and the percentage of female assistant professors have decreased since 1999, which may be cause for concern (however, the 2002 AIP survey results do not show this decline).

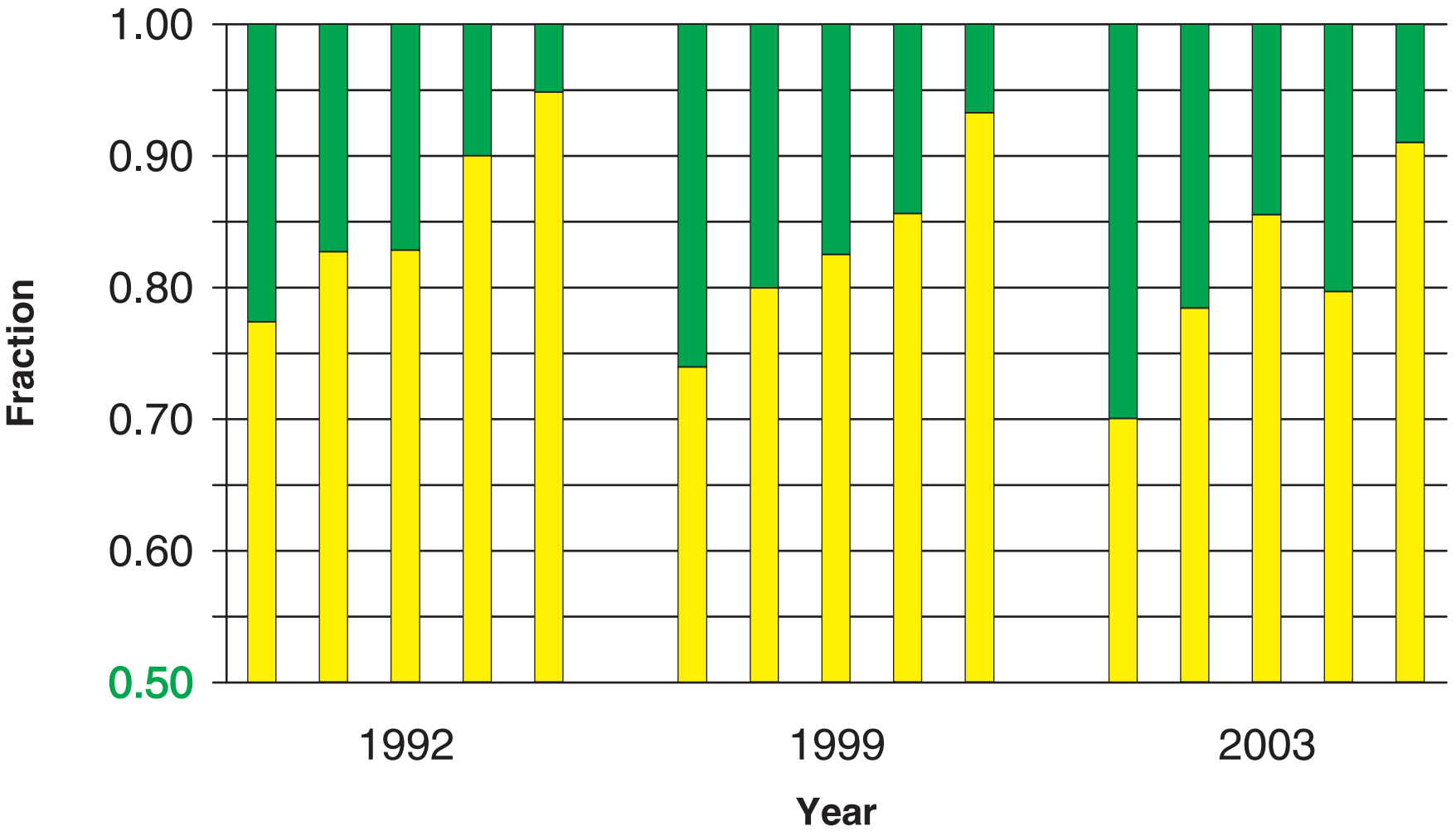
The job market may be worsening again; we see increases in the number of postdocs but decreases in the numbers of assistant and associate professors since 1999.

Fig. 1. Number of Astronomers by Gender and Rank



Left to right in each year: graduate students, postdocs, assistant professors, associate professors, and full professors.

Fig. 2. Fraction of Astronomers by Gender and Rank



Left to right in each year: graduate students, postdocs, assistant professors, associate professors, and full professors. Note y-axis scale does not go to zero.

Figures 3a through 3c show the distribution of male and female astronomers by rank in 1992, 1999, and 2003. That is, they show the percentage of all male (female) astronomers who are graduate students, postdocs, etc.

In 2003, most women in astronomy are graduate students, but this fraction is decreasing with time (it is now less than half). Male astronomers in 2003 are evenly divided between graduate students and full professors; they show a similar trend with time toward fewer graduate students and more full professors, so that the disparities in the distribution of men and women between these two ranks are not changing significantly. The percentages of men and women occupying the middle ranks are approximately equal.

Fig. 3a. 1992 Distribution of Male and Female Astronomers by Rank

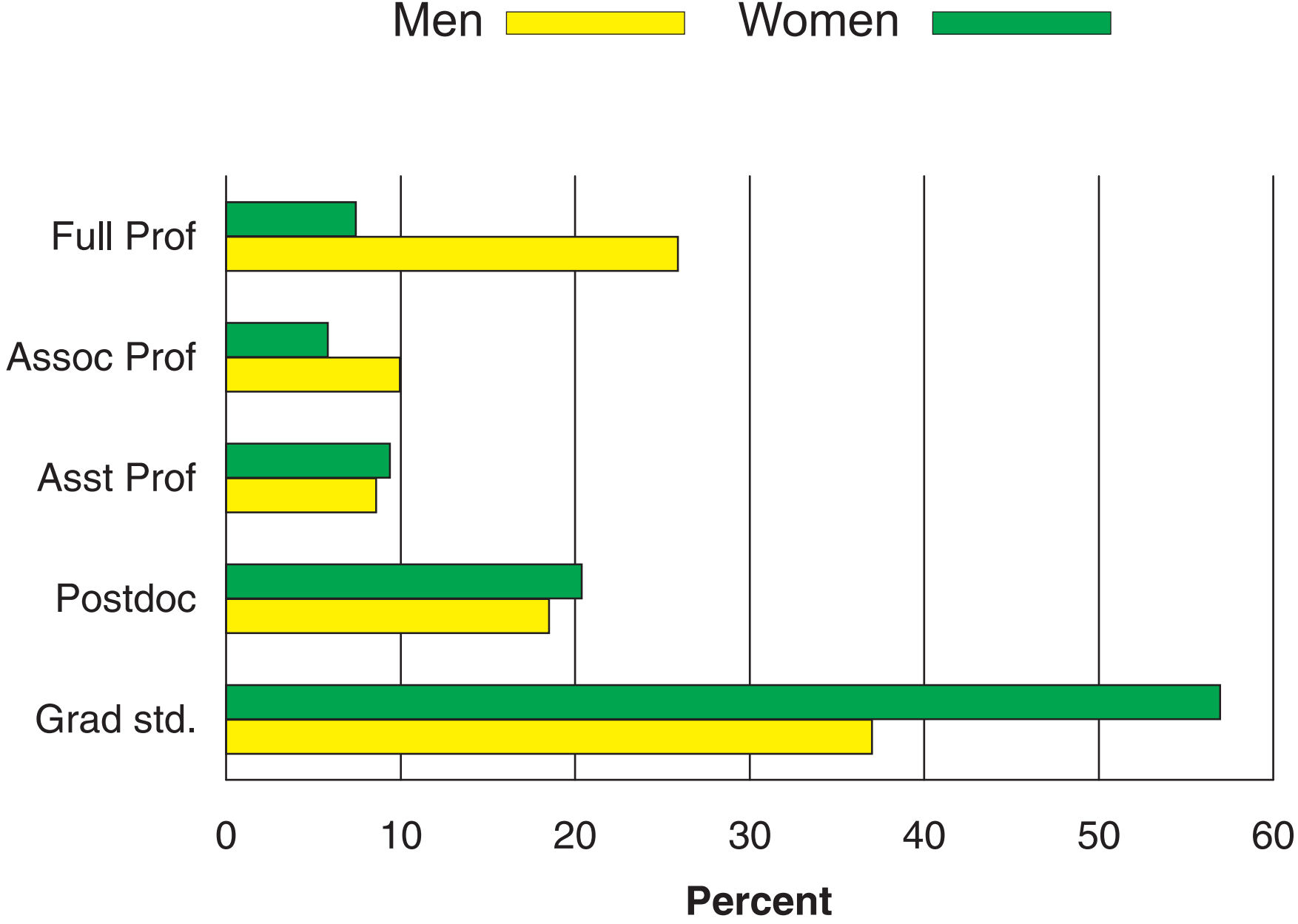


Fig. 3b. 1999 Distribution of Male and Female Astronomers by Rank

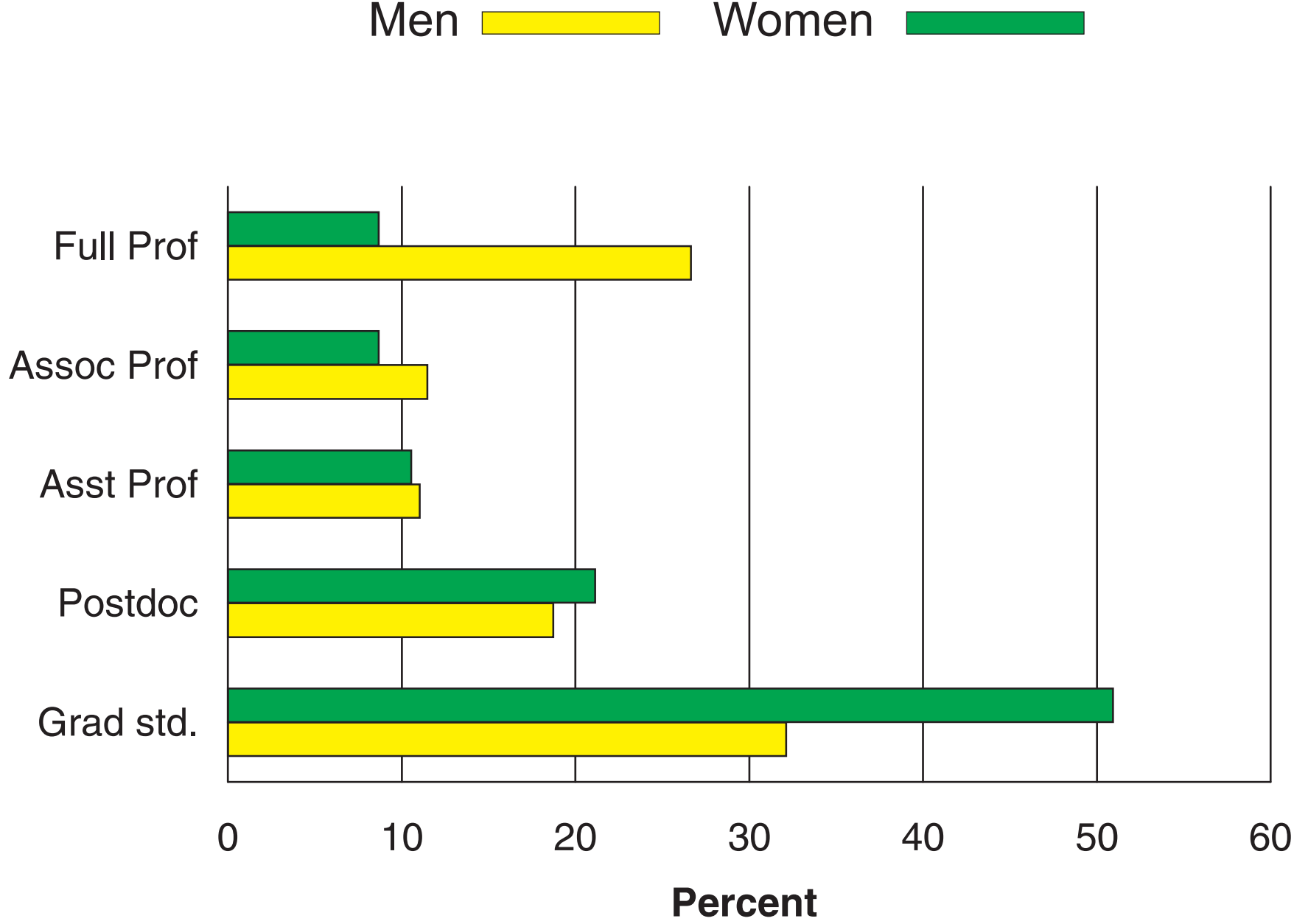
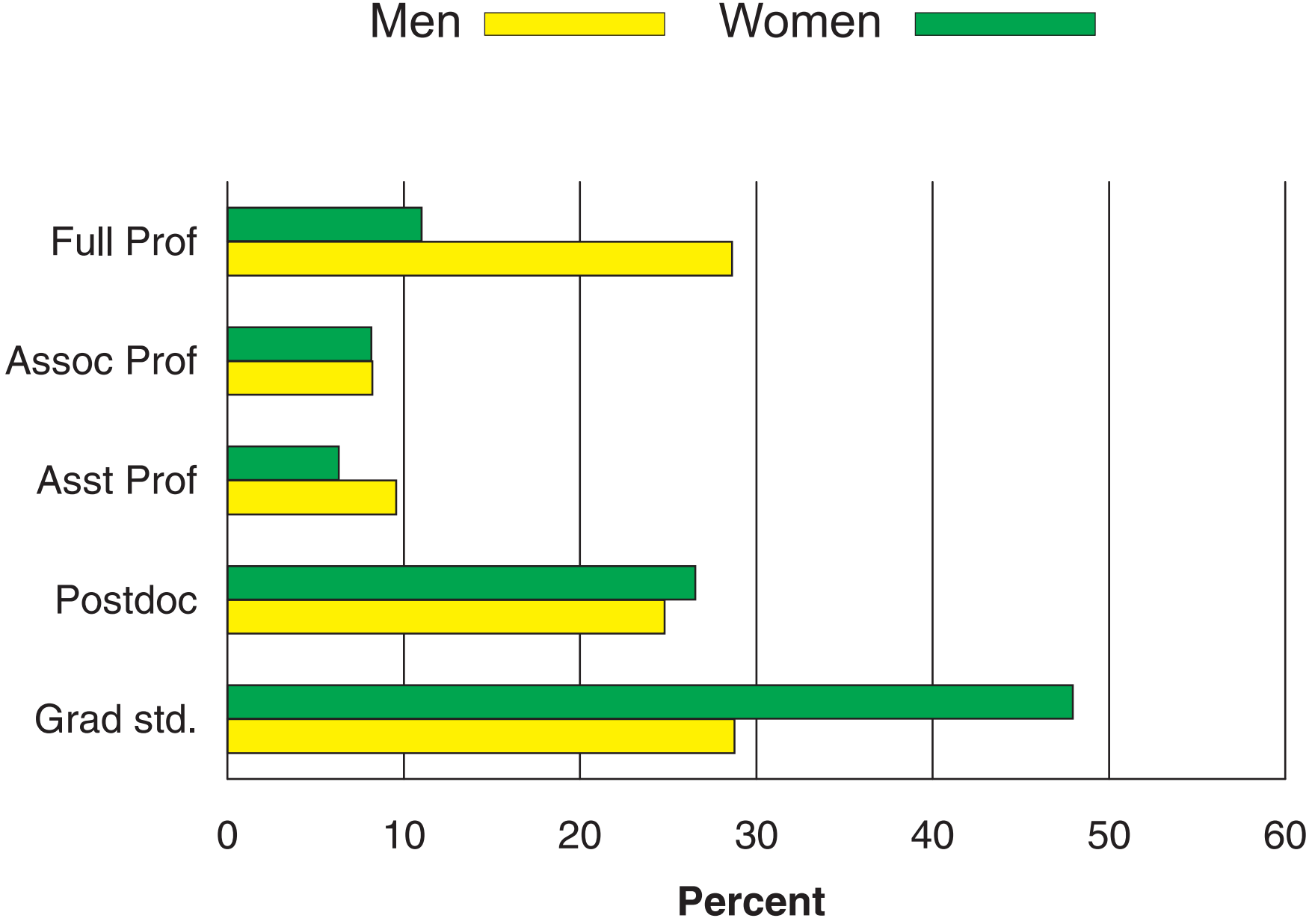


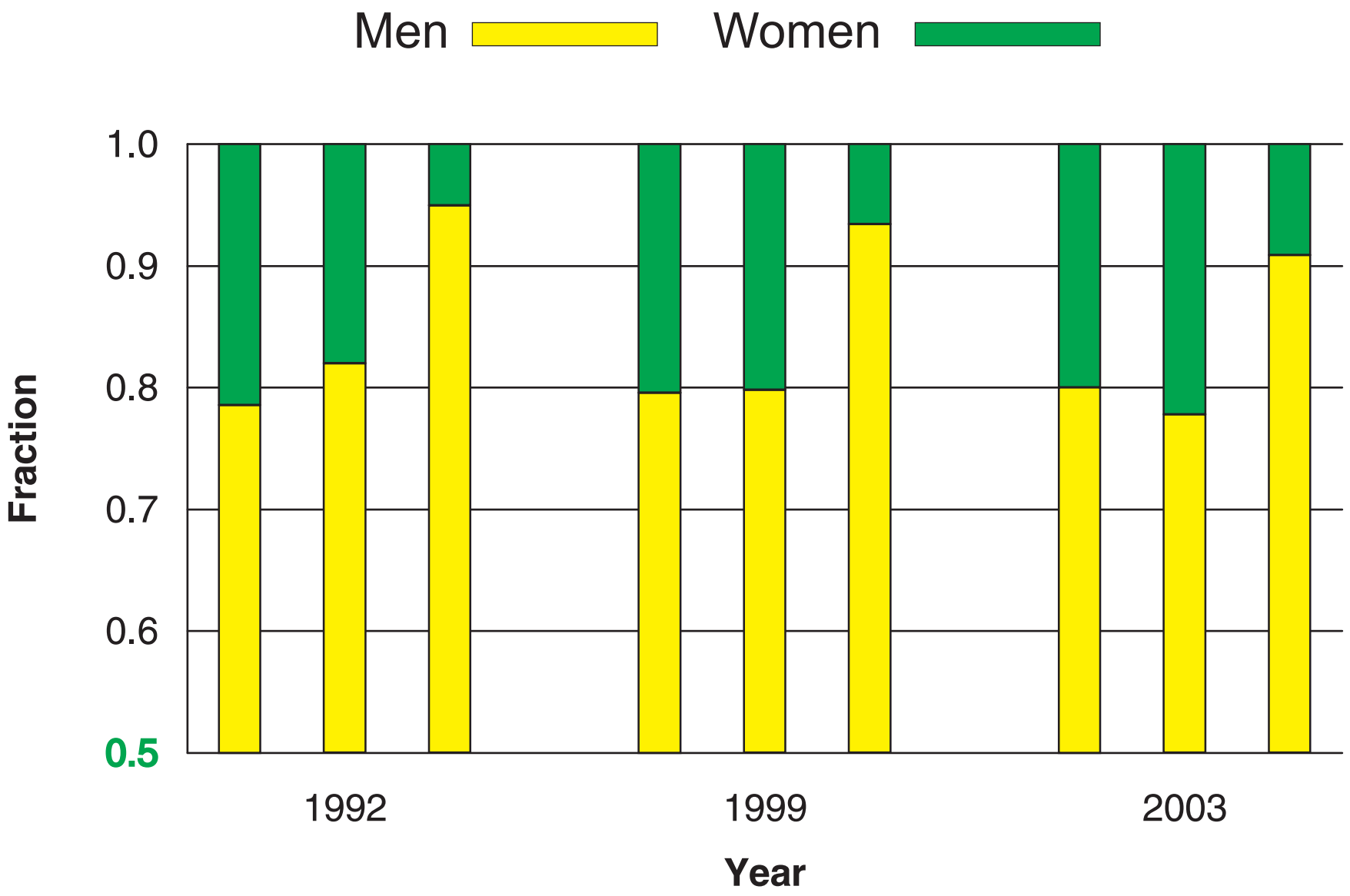
Fig. 3c. 2003 Distribution of Male and Female Astronomers by Rank



The CSWA surveys asked institutions to distinguish between “research” and “faculty” professors in their responses. Figure 4 shows the percentages of faculty astronomers who are men and women; Figure 5 shows the same for research astronomers.

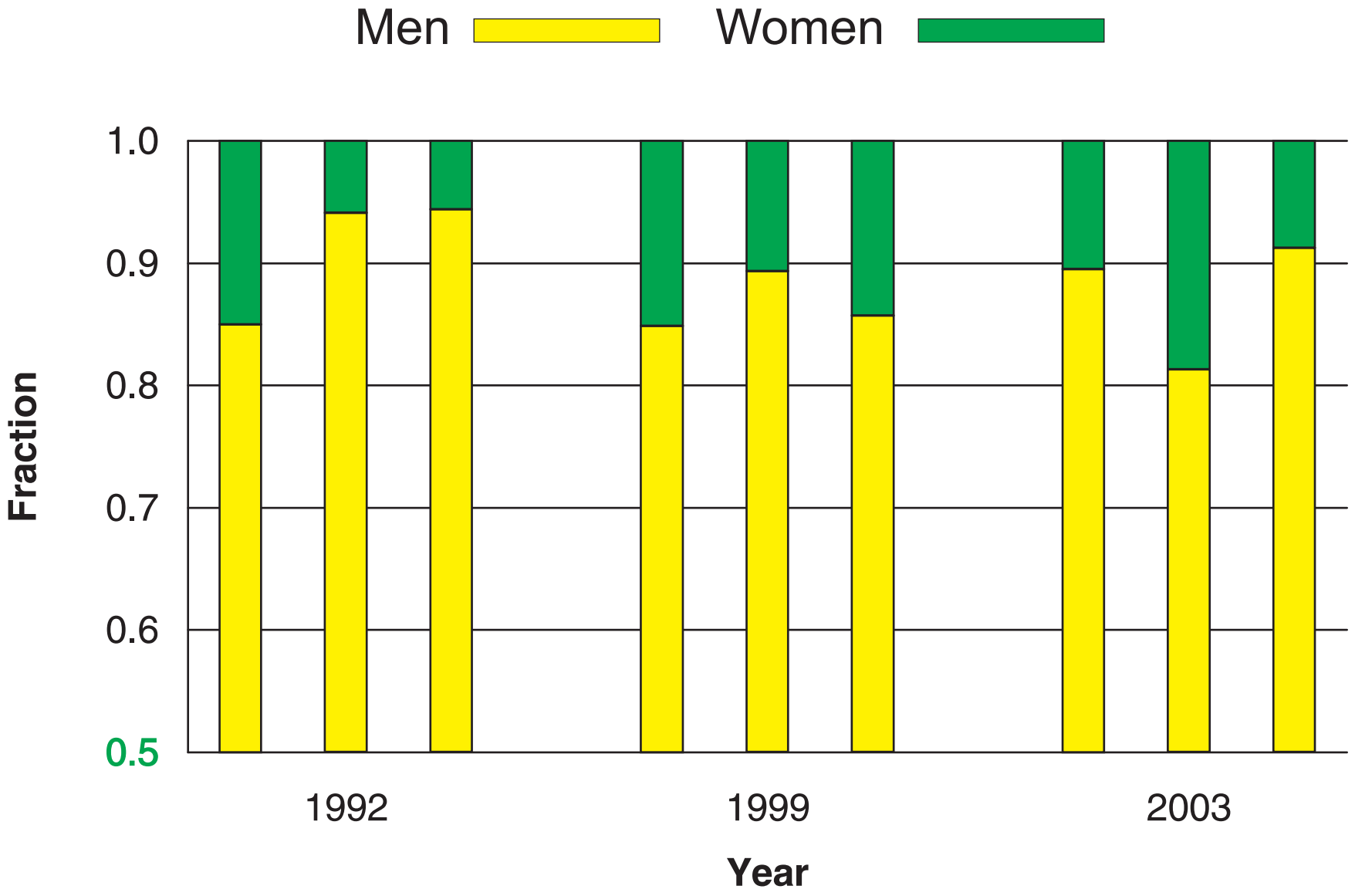
Overall, women are better represented in faculty positions than in research positions. This suggests that women are not more likely than men to hold soft-money positions. In fact, we find that among assistant professors in 2003, women are more likely than men to be classified as “faculty” (60% of female assistant professors are faculty, compared with 40% of male assistant professors; the distributions are similar at all other ranks).

Fig. 4. Fraction of Astronomy Faculty by Gender and Rank



Left to right in each year: assistant professors, associate professors, and full professors. Note y-axis scale does not go to zero.

Fig. 5. Fraction of Astronomy Research Faculty by Gender and Rank



Left to right in each year: assistant professors, associate professors, and full professors. Note y-axis scale does not go to zero.

Other interesting results from the survey:

- The percentage of women among current postdocs is approximately the same (22%) as the percentage of women among graduate students in 1992 and among Ph.D. recipients in astronomy in 2000 and 2001 (Ph.D. statistics from NSF's Survey of Earned Doctorates). But the percentage of women in graduate school appears to be increasing faster than the percentage of women at the postdoctoral level.

- There were a third as many female assistant professors in 2003 as female postdocs in 1999; for men, the fraction was one half.

- Female graduate students are better represented at public universities than at private schools, but the opposite is true for female full professors.

This survey had several limitations. We encountered difficulties in standardizing the professorial ranks and faculty/research distinction from institution to institution. Though we attempted to keep the sample as similar as possible to the 1992 and 1999 samples, this occasionally proved difficult as well; it was not always clear which criteria had been applied in the past, or even which people at a given institution should be considered astronomers! Statistical complications included small numbers and the possibility of counting people with multiple affiliations more than once. However, we feel this survey provides a robust view of the overall progression of women and men into our profession.

Like any good scientific study, this survey raised many new questions. For example, what factors contribute to the persistent decrease in the percentage of women with rank? Is there significant attrition of women during graduate school? Future studies can complement this one by focusing on more narrowly-defined groups and seeking more detailed information.