

Are Women Getting All the Jobs?

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Over the past few years some members of the mathematics community have voiced considerable concern that women are getting more than their share of the jobs available for Ph.D. mathematicians. In response to this we analyzed AMS data requested by the Joint Committee on Women in the Mathematical Sciences. We thank John Fulton, Jim Maxwell, and Kinda Remick of the AMS for supplying the data.

The data were collected from the 1991–1995 AMS-IMS-MAA Annual Surveys on initial employment of Ph.D.s in mathematics. The tables of data we received were refinements of those which regularly appear in the *Notices* (cf. August 1996, p. 850, Table 2B), further tabulated according to gender and citizenship. These survey data were obtained from questionnaires distributed to mathematics departments with follow-ups to the degree recipients. In our study we focused entirely on new Ph.D.s from Group I–III departments, that is, from departments of mathematics. The high response rate (95%) from Group I–III departments allowed us to regard it as a census. The primary result of this analysis is that women seem to be getting their share of first jobs, no more and no less. This note is a report on our findings.

The first question we asked is: Do men and women have the same employment rates? To an-

swer this we calculated jobless rates; that is, among the new Ph.D.s who reported their initial employment status, we calculated the percentage of individuals who were either still seeking or not seeking employment. The jobless rate for females was 10.2 % and for males 12.0 %. Since the jobless rates are not substantially different, we next focused on the Ph.D.s who obtained jobs and looked at what types of jobs men and women were getting. Table 1 summarizes the frequencies and percentages of first jobs in various categories.

From the information in Table 1 we see that there are gender differences in the pattern of first jobs. The greatest differences appear in the rates of employment at Bachelor's departments and the rates in Government & Industry. These differences are substantial, and we wonder why they occurred. Possibly women are more frequently offered or seek employment at Bachelor's departments in preference to Government and Industry. The opposite appears true for men. Is this due to bias on the part of employers or preference on the part of the new Ph.D.s? A definitive answer cannot come from these data.

The final question we asked is: Have women been equally successful in obtaining academic positions at a department of at least comparable ranking to that of the degree-granting department? We informally call this a comparable employment rate. After earning the Ph.D., many non-U.S. citizens left the U.S., and we do not know what type of foreign employment they found. Consequently, for this question we fo-

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Type of Employer	Female	Male	Totals
Group Ia*	106 (15.4%)	491 (19.6%)	597
Group II	34 (4.9%)	149 (5.9%)	183
Group III	65 (9.4%)	183 (7.3%)	248
Master's	82 (11.9%)	235 (9.4%)	317
Bachelor's	185 (26.9)	422 (16.8%)	607
Other Academic (incl. Foreign)	155 (22.5%)	652 (26.0%)	807
Government & Industry	62 (9.0%)	379 (15.1%)	441
TOTALS	689	2,511	3,200

*Group Ia = Group I + Research Institutes

Table 1. Observed frequencies of first jobs (percentages of column totals) for new Ph.D.s 1990-1995.

Employer Type	Type of Ph.D.-Granting Department					
	Group I		Group II		Group III	
	Female	Male	Female	Male	Female	Male
Group Ia	25.9%	26.7%	na	na	na	na
Group Ia-II	na	na	9.3%	14.9%	na	na
Group Ia-V	na	na	na	na	19.8%	16.1%

na means that this data entry is not applicable

Table 2. Comparable employment rates for U.S. citizen new Ph.D.s 1990-1995.

cused on the U.S. citizen cohort, which consists of 412 females and 1,303 males. Table 2 summarizes these comparable employment rates.

Because the information we received made no distinction between either one-year and multi-year positions or between tenure-track and non-tenure-track positions, the data cannot give a fully satisfactory answer to this question. For instance, a tenure-track appointment in a Group I department is counted the same as a one-year "hold-over" position for a former student. The information in Table 2 indicates that women are not more successful at obtaining comparable employment.

Our analysis suggests several avenues for future AMS-IMS-MAA data collection. As we said above, the causes for the observed differences in employment patterns could be investigated. Also, it is not known if the first job patterns result in salary disparity for females and males, but we suspect starting salaries in Government and Industry are higher than those at Bachelor's departments. Finally, a five- or ten-year longitudinal study would give information on what happens to mathematics Ph.D.s after the

first year of employment. A careful survey and analysis would benefit all Ph.D.s in mathematics.

From the data we received and analyzed it appears that women are doing about as well as men in the search for jobs: about as well at finding first jobs and about as well at finding comparable employment. Although there are gender differences in patterns of initial employment, there seems to be little reason for concern that women are getting preferential treatment in the new Ph.D. job market. To summarize: Are women getting all the jobs? We think not.