

# Preliminary Report on the 2009-2010 New Doctoral Recipients

*Richard Cleary, James W. Maxwell, and Colleen Rose*

This report presents a statistical profile of recipients of doctoral degrees awarded by departments in the mathematical sciences at universities in the United States during the period July 1, 2009, through June 30, 2010. All information in the report was provided over the summer and early fall of 2010 by the departments that awarded the degrees. The report includes a preliminary analysis of the fall 2010 employment plans of 2009–2010 doctoral recipients and a demographic profile summarizing characteristics of citizenship status, sex, and racial/ethnic group. This preliminary report will be updated by the Report on the 2009–2010 New Doctorates to reflect subsequent reports of additional 2009-2010 doctoral recipients from the departments that did not respond in time for this report, along with additional information provided by the doctoral recipients themselves. A list of the nonresponding departments is on page 299.

Detailed information, including tables which traditionally appeared in this report, is available on the AMS website at [www.ams.org/annual1-survey/survey-reports](http://www.ams.org/annual1-survey/survey-reports).

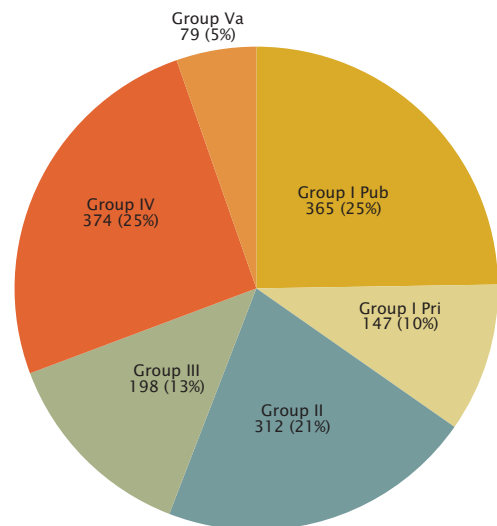
## Doctoral Degrees Awarded

Based on the data collected it appears the number of Ph.D.s being awarded is still increasing. The 258 departments responding this year and last year reported a total of 1,474 new doctoral recipients, an increase of 58 over the 1,416 new doctoral recipients they reported last year. Based on this and an analysis of the departments that have yet to respond, it is likely that the final count for 2010 will exceed last year's final count of 1,605.

Again considering only the 258 departments responding both years, all groups report increases in the number of new Ph.D.s except for Group I Private. The nineteen departments in Group 1 Private responding to both surveys reported 45 fewer new doctoral recipients for 2010, 147 for 2009-2010 compared to 192 for 2008-2009. (See page 298 for a description of the department groupings.)

30% (440) of the new Ph.D.s had a dissertation in statistics/biostatistics, followed by applied mathematics (213) and algebra/number theory (206) both with 14%.

**Figure A.1: Number and Percentage of Degrees Awarded by Department Groupings**

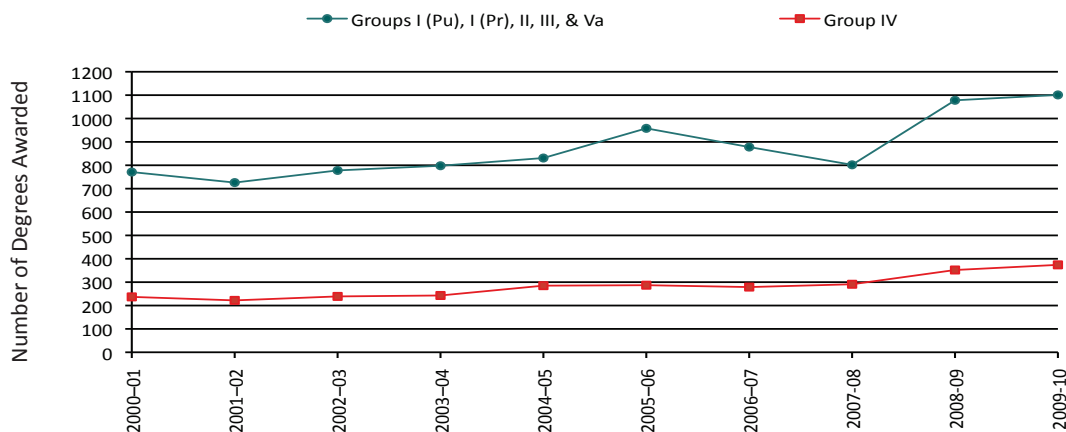


**Total Degrees Awarded: 1,475**

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## Doctoral Degrees Awarded

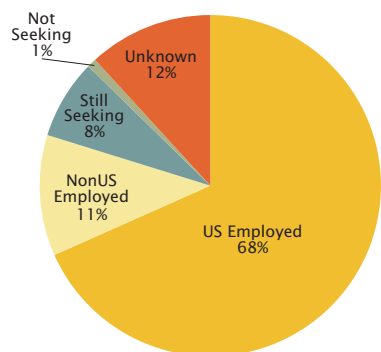
**Figure A.2: New Doctoral Degrees Awarded by Combined Groups, Preliminary Counts**



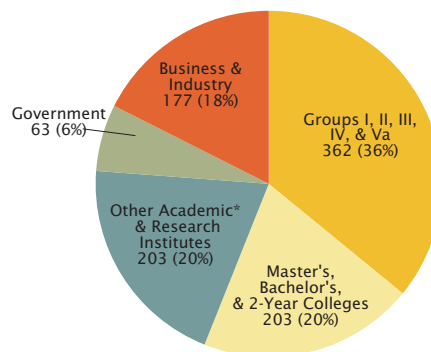
## Employment

The overall preliminary unemployment rate is 9.9%, up from 7.9% last year. The employment plans are known for 1,301 of the 1,475 new doctoral recipients. The number of new doctoral recipients employed in the U.S. is 1,008, up 21 from last year's preliminary number. Employment in the U.S. increased in all categories except "Business and Industry" which decreased 4%. The number of new Ph.D.s taking positions in government has remained relatively stable at 63 this year. Academic hiring of new doctoral recipients increased to 768, compared to 741 last year.

**Figure E.1: Employment Status**



**Figure E.2: U.S. Employed by Type of Employer**

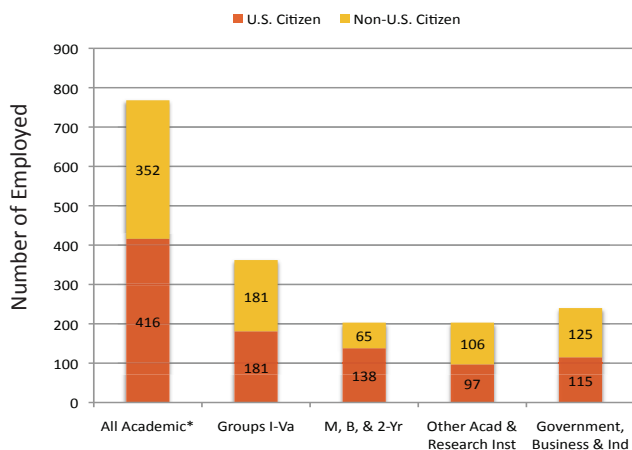


\*Other Academic consists of departments outside the mathematical sciences including numerous medical related units.

- 9% of new Ph.D.s are working at the institution which granted their degree, up from 6% last year and higher than recent years when it was 7% and 8%.
- 53% (531) of those employed in the U.S. are U.S. citizens, up from 51% last year.
- 80% (477) of non-U.S. citizens known to have employment are employed in the U.S., the remaining 175 non-U.S. citizens are either employed outside of the U.S. or unemployed.
- Positions in Business & Industry increased slightly in Group IV (from 85 to 90); remained the same for Group II at 23 and decreased slightly in Groups I (Pu), I (Pr) and III.

## Employment

**Figure E.3: Employment in the U.S. by Type of Employer and Citizenship**

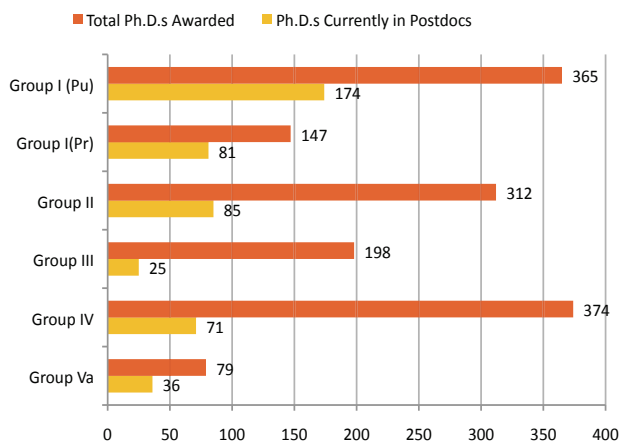


\*Includes Groups I-Va, M, B, 2-Yr, other academic and research institutes/nonprofit.

Looking at U.S. citizens whose employment status is known:

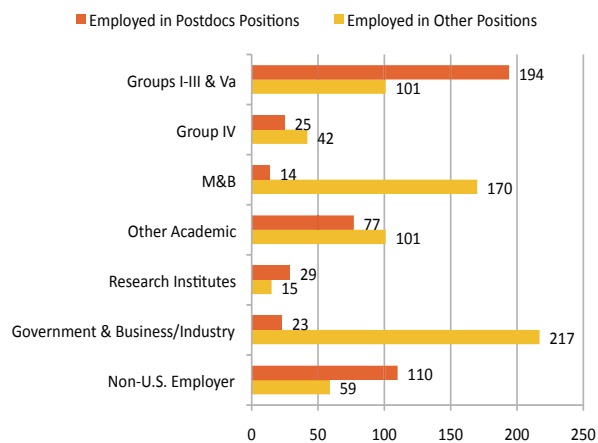
- 82% (531) are employed in the U.S., of these:
  - 34% are employed in Ph.D.-granting departments
  - 44% are employed in all other academic positions
  - 22% are employed in government, business and industry positions

**Figure E.4: New Ph.D.s in Postdocs by Degree-Granting Department**



- 31% (472) of the new Ph.D.s are reported to be in postdoc positions.
- 23% of the new Ph.D.s in postdoc positions are employed outside the U.S.
- 47% of the new Ph.D.s having U.S. academic employment are in postdocs; last year this percentage was 42%.
- 60% of the new Ph.D.s employed in Groups I-Va are in postdoc positions, 42% of these postdocs received their Ph.D.s from Group I (Pu) institutions.
- 55% of the new Ph.D.s in Group I (Pr) are employed in postdocs, while only 13% of new Ph.D.s awarded by Group III are in postdocs.

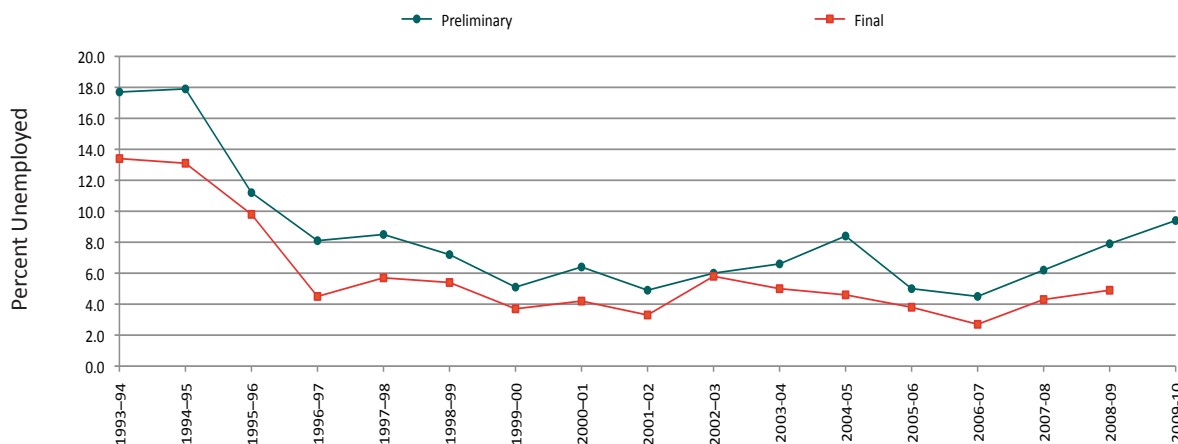
**Figure E.5: Employment in Postdocs by Type of Employer**



- Unemployment among those whose employment status is known is 9.9%, up from 8% for fall 2009.
- Group III reported highest unemployment at 14.6%.
- Group IV reported the lowest unemployment at 4.2%.
- 10.3% of U.S. citizens are unemployed, compared to 8.6% in fall 2009.
- 9.5% of non-U.S. citizens are unemployed; the rates by visa status are 12.7% for those holding a permanent visa and 9.1% for those with a temporary visa.

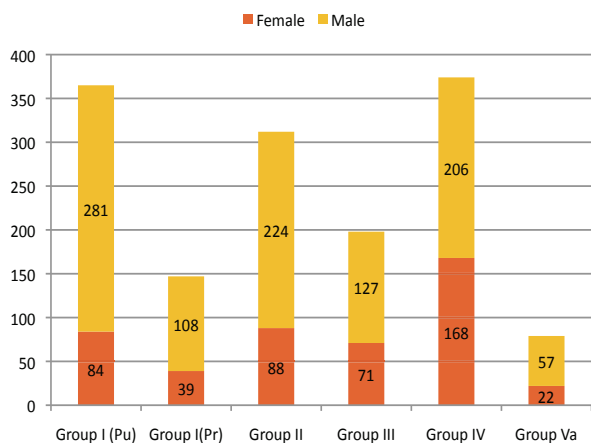
## Employment

**Figure E.6: Percentage of New Doctoral Recipients Unemployed 1993-2010**

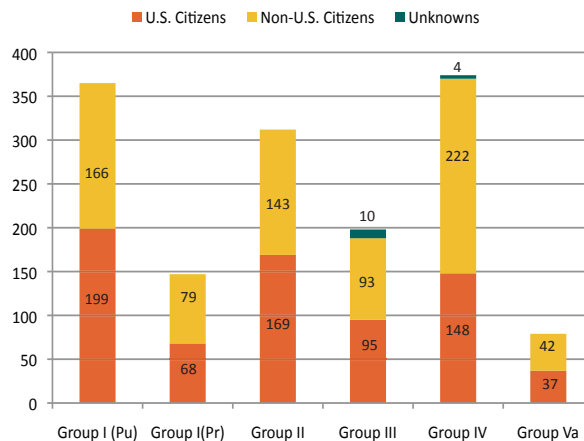


## Demographics

**Figure D.1: Gender of Doctoral Recipients by Degree-Granting Department**



**Figure D.2: Citizenship of Doctoral Recipients by Degree-Granting Department**

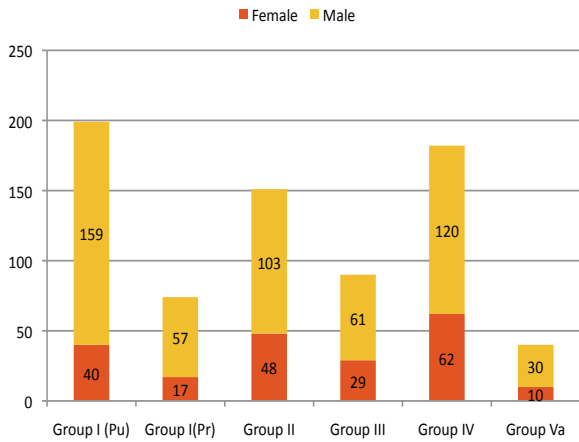


• Females account for 32% (472) of the 1,475 Ph.D.s, the same percentage reported in fall 2009 and 2008.

• 49% (716) of Ph.D.s are U.S. citizens; last year's figure was 47%.

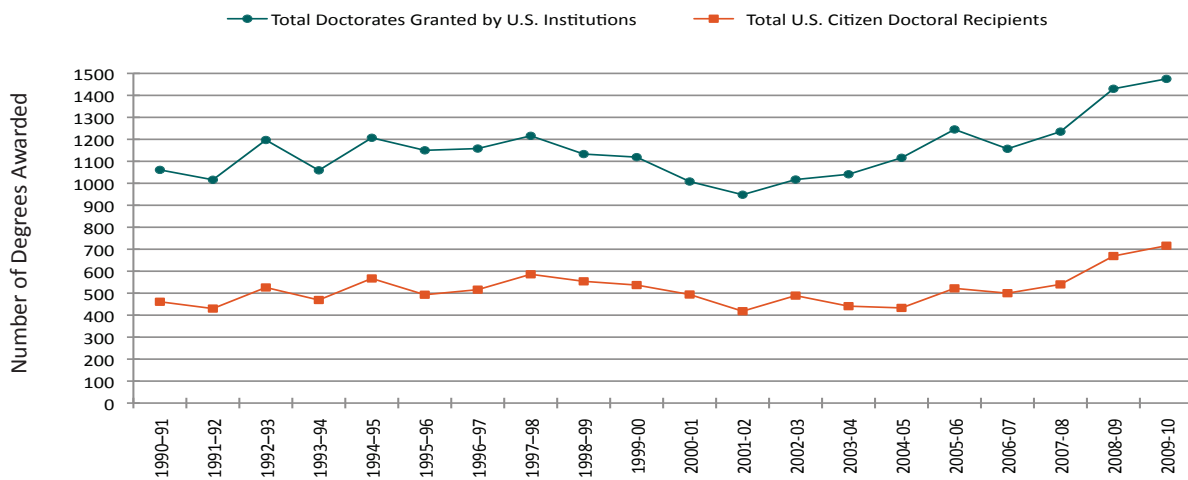
## Demographics

**Figure D.3: Gender of U.S. Citizen Doctoral Recipients by Degree-Granting Department**



- 29% (206) of the U.S. citizens are female; last year's figure was 30%.
- Among the U.S. citizens: 4 are American Indian or Alaska Native, 23 are Asian, 22 are Black or African American, 19 are Hispanic or Latino, 5 are Native Hawaiian or Other Pacific Islander, 461 are White, and 6 are of unknown race/ethnicity.

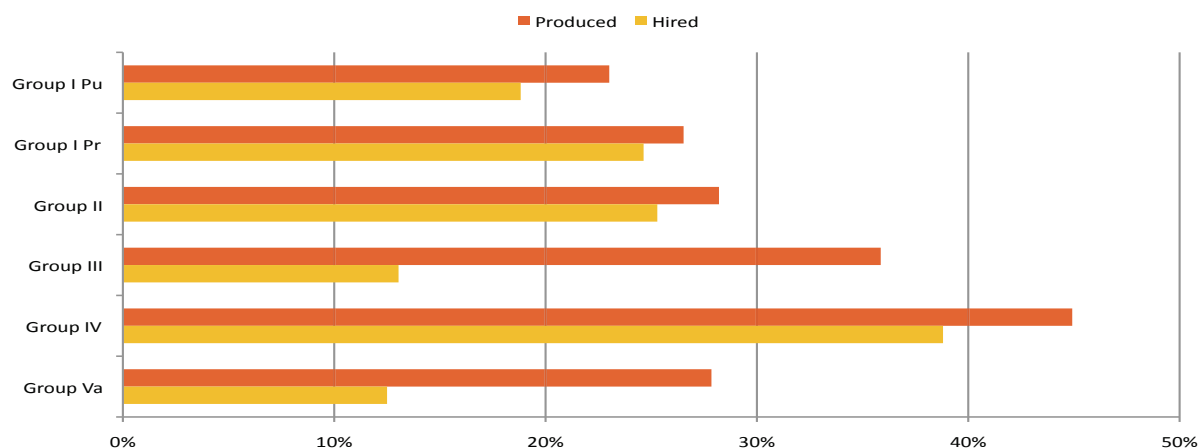
**Figure D.4: U.S. Citizen Doctoral Recipients Preliminary Counts**



## Female New Doctoral Recipients

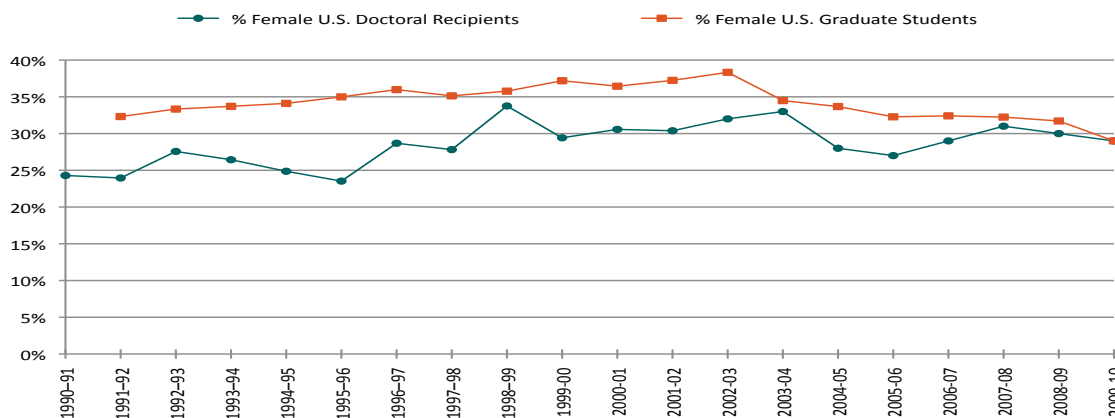
For the third consecutive year the proportion of female new doctoral recipients is 32%, based on preliminary counts. While the percentage has remained flat, the number of females receiving Ph.D.s has increased from 388 in 2008, to 462 in 2009, to 472 this year. The unemployment rate for females is 8.9%, compared to 10.4% for males and 9.9% overall.

**Figure F.1: Females as a Percentage of New Doctoral Recipients Produced and Hired by Doctoral-Granting Department**



- 44% of those hired by Group B were women (up from 43% last year) and 43% of those hired by Group M were women (up from 40% last year).
- 25% of those reporting having postdoc positions (472) are women.
- 43% of the women employed in Groups I-Va are in postdoc positions.

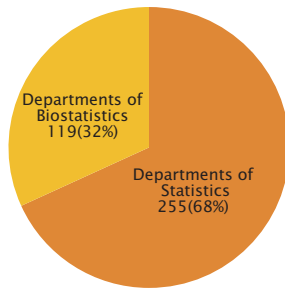
**Figure F.2: Females as a Percentage of U.S. Citizen Doctoral Recipients**



## Ph.D.s Awarded in Group IV (Statistics/Biostatistics)

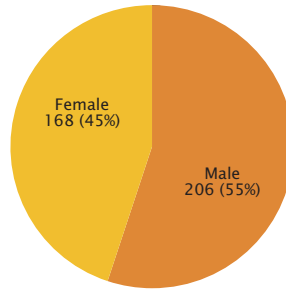
This section contains information about new doctoral recipients in Group IV. Group IV produced 374 new doctorates, of which all but 6 had dissertations in statistics/biostatistics. This is a 6% increase over the number reported for fall 2009 of 352. In addition, Groups I-III and Va combined had 72 Ph.D. recipients with dissertations in statistics. In Group IV, 148 (40%) of the new doctoral recipients are U.S. citizens (while in the other groups 52% are U.S. citizens). The 68 departments responding last year and this year reported a total of 368 new doctoral recipients, an increase of 2% over last year. While the unemployment rate for new Ph.D.s with dissertations in statistics or probability has increased to 6.5%, the unemployment among the Group IV new Ph.D.s is 4.2%.

**Figure S.1: Ph.D.s Awarded in Group IV**



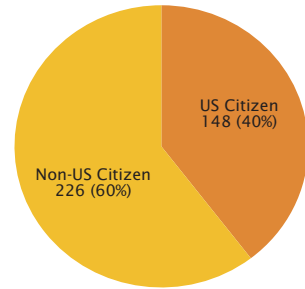
- 25% of all Ph.D.s awarded were in Group IV.
- Females account for 40% of statistics and 55% of biostatistics Ph.D.s awarded.

**Figure S.2: Gender of Group IV Ph.D. Recipients**



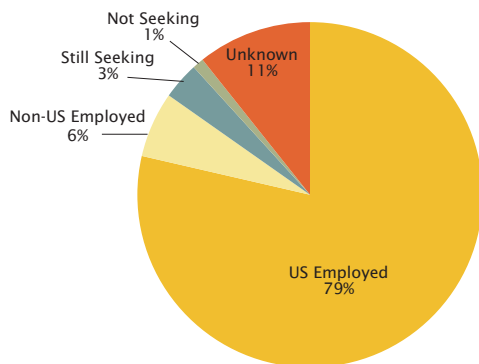
- Females accounted for 45% of the 374 Ph.D.s in statistics/biostatistics, compared to all other groups combined, where 28% (304) are female.

**Figure S.3: Citizenship of Group IV Ph.D. Recipients**



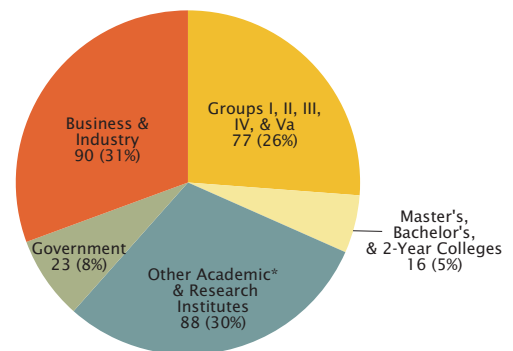
- 42% of of Group IV U.S. citizens are females, while in all other groups 25% are females.

**Figure S.4: Employment Status of Group IV Ph.D. Recipients**



- 4.2% of Group IV Ph.D.s are unemployed compared to 12.1% among all other groups. This is up from 3.3% last year.
- Unemployment among new Ph.D.s with dissertations in statistics/probability is 6%, up from 5%. Among all other dissertation groupings 9.9% are unemployed.

**Figure S.5: U.S. Employed Group IV Ph.D. Recipients by Type of Employer**



\*Other Academic consists of departments outside the mathematical sciences including numerous medical related units.

- 31% of Group IV Ph.D.s are employed in Business/Industry, compared to 12% in all other groups.
- 39% of those hired by Group IV were females, compared to 21% in all other groups.

## Other Information

### Survey Response Rates

#### Doctorates Granted Departmental Response Rates

<b>Group I (Pu)</b>	25 of 25 including	0 with no degrees
<b>Group I (Pr)</b>	19 of 23 including	0 with no degrees
<b>Group II</b>	51 of 56 including	2 with no degrees
<b>Group III</b>	74 of 81 including	8 with no degrees
<b>Group IV</b>	74 of 92 including	5 with no degrees
Statistics	47 of 57 including	2 with no degrees
Biostatistics	27 of 35 including	3 with no degrees
<b>Group Va</b>	16 of 22 including	2 with no degrees

A list of departments still to respond with their doctoral degrees awarded is available on page 299.

### Previous Annual Survey Reports

The 2009 First, Second, and Third Annual Survey Reports were published in the *Notices of the AMS* in the February, August, and November 2009 issues, respectively. These reports and earlier reports, as well as a wealth of other information from these surveys, are available on the AMS website at [www.ams.org/annual-survey/survey-reports](http://www.ams.org/annual-survey/survey-reports).

### Acknowledgements

The Annual Survey attempts to provide an accurate appraisal and analysis of various aspects of the academic mathematical sciences scene for the use and benefit of the community and for filling the information needs of the professional organizations. Every year, college and university departments in the United States are invited to respond. The Annual Survey relies heavily on the conscientious efforts of the dedicated staff members of these departments for the quality of its information. On behalf of the Data Committee and the Annual Survey Staff, we thank the many secretarial and administrative staff members in the mathematical sciences departments for their cooperation and assistance in responding to the survey questionnaires.

### Other Sources of Data

Visit the AMS website at [www.ams.org/annual-survey/other-sources](http://www.ams.org/annual-survey/other-sources) for a listing of additional sources of data on the Mathematical Sciences.

### Group Descriptions

**Group I** is composed of 48 departments with scores in the 3.00–5.00 range. Group I Public and Group I Private are Group I departments at public institutions and private institutions, respectively.

**Group II** is composed of 56 departments with scores in the 2.00–2.99 range.

**Group III** contains the remaining U.S. departments reporting a doctoral program, including a number of departments not included in the 1995 ranking of program faculty.

**Group IV** contains U.S. departments (or programs) of statistics, biostatistics, and biometrics reporting a doctoral program.

**Group V** contains U.S. departments (or programs) in applied mathematics/applied science, operations research, and management science which report a doctoral program.

**Group Va** is applied mathematics/applied science; Group Vb, which was no longer surveyed as of 1998–99, was operations research and management science.

**Group M** contains U.S. departments granting a master's degree as the highest graduate degree.

**Group B** contains U.S. departments granting a baccalaureate degree only.

Listings of the actual departments which compose these groups are available on the AMS website at [www.ams.org/annual-survey/groups\\_des](http://www.ams.org/annual-survey/groups_des).

### About the Annual Survey

The Annual Survey series, begun in 1957 by the American Mathematical Society, is currently under the direction of the Data Committee, a joint committee of the American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society of Industrial and Applied Mathematics. The current members of this committee are Pam Arroway, Richard Cleary (chair), Steven R. Dunbar, Susan Geller, Abbe H. Herzig, Ellen Kirkman, Joanna Mitro, James W. Maxwell (ex officio), Bart S. Ng, Douglas Ravel, and Marie Vitulli. The committee is assisted by AMS survey analyst Colleen A. Rose. In addition, the Annual Survey is sponsored by the Institute of Mathematical Statistics. Comments or suggestions regarding this Survey Report may be directed to the committee.



## Doctoral Degrees Not Yet Reported

The following mathematical sciences, statistics, biostatistics, and applied mathematics departments have not yet responded with their doctoral degrees awarded. Every effort will be made to collect this information for inclusion in the New Doctoral Recipients Report which will be published in the August 2011 issue of *Notices of the AMS*.

Departments yet to respond can obtain copies of the Doctorates Granted survey forms on the AMS website at [www.ams.org/annual-survey/surveyforms](http://www.ams.org/annual-survey/surveyforms), by sending email to [ams-survey@ams.org](mailto:ams-survey@ams.org), or by calling 1-800-321-4267, ext. 4124.

### Group I (Public)

All departments have responded.

### Group I (Private)

Brandeis University  
Princeton University  
Rice University  
Stanford University

### Group II

Claremont Graduate University  
Clemson University  
Dartmouth College  
University of California, Davis  
University of California, Santa Cruz

### Group III

Missouri University of Science and Technology  
New Mexico State University, Las Cruces  
Old Dominion University  
Stevens Institute of Technology  
University of Missouri-St. Louis  
University of Nevada, Las Vegas  
University of New Mexico

### Group IV (Statistics)

Harvard University  
New York University, Stern School of Business  
North Dakota State University, Fargo  
Northwestern University  
University of Alabama-Tuscaloosa  
University of California, Davis  
University of Chicago  
University of Wisconsin, Madison  
Western Michigan University  
Yale University

### Group IV (Biostatistics)

Cornell University  
Louisiana State University, Health Science Center  
The University of Albany, SUNY  
University of Cincinnati, Medical College  
University of Louisville  
University of Massachusetts, Amherst  
University of South Carolina  
Yale University

### Group Va (Applied Mathematics)

Illinois Institute of Technology  
Louisiana Technology University  
Princeton University  
State University of New York at Stony Brook  
University of California-Merced  
University of Washington