

Data Sources: Who Is Enrolling in Doctoral Programs? The Changing Characteristics of Doctoral Students, 1996 to 2004

The media, educational researchers, and policy makers have begun to pay more attention to the issues surrounding doctoral student completion rates and time to degree. These groups have expressed alarm at their initial inquiries into these statistics. The *Washington Post*, for example, has compared the 50%-60% doctoral completion rates in some disciplines to “the same rate reported in some urban K-12 systems.”¹ Research on trends in the number of years it has taken students to complete their doctoral programs has found that “[t]ime to doctoral degree has increased consistently in American universities since 1967, in some fields by as much as two years.”² These results have led the National Research Council and others to seek to expand the amount of information reported on degree completion and other measures of doctoral program performance so that Americans can “compare doctoral programs, assess their quality, and provide information about these programs for doctoral students choosing programs...”³ Completion and time-to-degree rates have thus become proxies for measuring the quality of the doctoral enterprise.

However, any discussions regarding measurements of doctoral completion have to be placed in the context of the changing demographics of students who seek these degrees. Since 1995, there have been several dramatic shifts in the composition of students in doctoral programs, particularly in the number of candidates from traditionally underrepresented backgrounds. These changes represent great progress for groups that have historically had unequal chances of achieving advanced degrees. But the shifts also could have substantial effects on the reliability of the metrics traditionally used to evaluate performance of doctoral programs.

According to the National Center for Education Statistics’ National Postsecondary Student Aid Study (NPSAS), the number of students enrolled in Ph.D. and other doctoral programs at American four-year colleges and universities increased 12%, from approximately 330,000 in academic year 1995-1996 to 369,000 in 2003-2004 (the most recent year of complete NPSAS data). Three groups of students have led this recent gain in enrollment. The first and most prominent is the increasing number of female students. The number of women in doctoral programs jumped 50% in the 1996-to-2004 period, while the enrollment of men rose only 14%. In 1993, women represented just 38% of the students seeking doctoral degrees. By 2004, their share of the student enrollment had climbed to 51% (see Table 1).

Members of underrepresented racial/ethnic minority groups are the second group of students who saw rapid growth in

Table 1. Demographic Characteristics of Doctoral Students at U.S. Graduate Programs*, 1995-1996 to 2003-2004

	1995-1996	2003-2004
Gender		
Men	62%	49%
Women	38%	51%
Race/Ethnicity (Domestic Students Only)		
White	76%	71%
URM**	13%	21%
Asian***	11%	8%
Citizenship Status		
Domestic	90%	80%
International	10%	20%
Age Level		
24 or Younger	10%	15%
25 to 29	33%	34%
30 to 34	25%	20%
35 to 39	13%	10%
40 & Older	20%	21%
Median Age (Years)	31	29
Marital/Family Status		
Single, No Children	52%	49%
Married, No Children	19%	22%
Single or Married, With Children	29%	28%

Due to rounding, details may not total to 100%.

*Includes only students enrolled at four-year public and private colleges and universities based in the United States.

**Underrepresented minority students, including African Americans, Native Americans, Latinos, and persons of more than one race or ethnicity

***Includes Pacific Islanders.

Source: National Center for Education Statistics, National Postsecondary Student Aid Study, 1996 and 2004.

doctoral student enrollment. Collectively, the number of African American, Latino, and Native American students seeking doctorates jumped 65%, and their share of total enrollment among domestic students rose from just 13% in 1996 to 21% in 2004. Conversely, the White, non-Hispanic proportion of domestic doctoral enrollment fell from 76% to 71%, as the 1% rate of growth in White student enrollment lagged that of underrepresented minority groups.

The third major area of growth in doctoral student enrollment occurred in the number of international students. The number of non-U.S. citizens or permanent residents enrolled for doctoral study in the United States doubled during the 1996 to 2004 period; in this same period, domestic student enrollment increased just 1%. The overall increase in international students occurred despite the Congressionally imposed restrictions on foreign student visas that were instituted soon after the September 11, 2001, terrorist attacks.⁴ Due in part to these restrictions, international enrollment declined sharply in more recent years; prior CGS research found that first-time enrollment of international students at American graduate schools fell 6% between fall 2003 and fall 2004.⁵ This decline, however, was not steep enough to offset the gains in students reported prior to 2001, as international students’ share of total doctoral enrollment rose from 10% in 1996 to 20% in 2004.

There were other shifts in the demographic characteristics of doctoral students during this time period. For example, the share of doctoral students who were married and/or had children increased slightly (from 48% to 51%). Doctoral students also became slightly younger, as the percentage of students who were under 30 years old

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grew from 43% to 49% and the median age of doctoral candidates fell from 31 to 29.

It should be noted that despite these enrollment gains, women and minorities remain underrepresented in science, engineering, and technology programs. In 2004, just 7% of female doctoral candidates were enrolled in mathematics, engineering, and computer science disciplines, compared with 23% of men (see Table 2). At the same time, 18% of women were seeking degrees in education, versus 11% of men. A noticeably higher share of women also enrolled in social and behavior sciences relative to men (20% versus 10%). Among domestic students, underrepresented minority doctoral candidates were the least likely to be enrolled in mathematics, engineering, and computer sciences but the most likely to be in education. One quarter of underrepresented minority doctoral students were seeking degrees in education in 2004, compared with 16% of Whites. Conversely, only 6% of minority students were pursuing degrees in mathematics, engineering, and computer sciences, compared with 9% of Whites and 18% of Asian Americans.

In short, in a relatively short period students in doctoral programs became much more likely to be female, non-White, and international. While the increased gender and racial diversity of students engaged in doctoral studies is welcome news, it appears that women and minorities remain

underrepresented in the science and technology fields that are critical for economic growth in the 21st century. Students today also appear to be a bit more likely to be married and/or caring for young children than they were in the past.

The changes in the composition of doctoral candidates has occurred at the same time as the media and educational researchers have begun to pay more attention to developing measures that seek to evaluate doctoral programs. Efforts to compile and analyze data to compare doctoral programs, while laudable, would be even better if they took into account the new populations of students entering these programs. For example, because more of these students have young children, they may take longer to complete degree programs due to the added family obligations. Issues around how data on doctoral education are compiled may also arise. Underrepresented

minorities and women, on average, take longer than Whites and men to receive their degrees, and as such women and minorities may be more likely to be counted as dropouts rather than as continuing students.⁶ One other factor that must be considered is institutional mission. For example, a number of doctoral programs at Historically Black College and Universities may intentionally be designed to allow students to take longer to finish their degrees, given the continuing lower percentage of minority students in certain fields.

Doctoral programs play a vital role in enhancing U.S. competitiveness in the global economy, so it is very important that they are held to a high standard of quality. Graduate deans, as key leaders of the doctoral enterprise, have always been concerned about student success rates, and have continually devised new strategies for improving program effectiveness. At CGS, the Ph.D. Completion Project, funded in part by Pfizer and the Ford Foundation, aims to help graduate deans and others share techniques and best practices for improving doctoral completion rates, especially among the growing populations of students from underrepresented groups (see the project's Web site at www.phdcompletion.org for more information).

Given the high economic and social impact of doctoral studies on American life, it is now more important than ever to provide the best information available to the media, prospective students, and policy makers, all of whom want to make sure the time and resources devoted to doctoral education are used wisely. But the statistics that are generally used to judge graduate student and

school performance—time to degree and completion rates—should be placed in a broader context that takes into account the changing characteristics of the student population so that programs, departments, and institutions are evaluated equitably. Declining completion rates and longer time-to-degree statistics are not acceptable for any

particular groups of students. However, any data that describe differences in doctoral program performance should keep in mind the shifts in the types of students being served by different institutions and departments. Empirical findings need to be evaluated in the context of the realities of graduate students' lives and the ability of doctoral programs to facilitate reasonable time to degree and completion rates for all students.

Table 2. Major Fields of Study for American Doctoral Students Enrolled in U.S. Graduate Schools* in 2003-2004, by Gender and Race/Ethnicity

	Humanities	Social & Behavioral Sciences	Life & Physical Sciences	Mathematics, Engineering, & Computer Sciences	Education	All Others
Total (All Students)	10%	16%	11%	15%	15%	33%
Gender						
Men	11%	12%	12%	23%	11%	31%
Women	9%	20%	11%	7%	18%	34%
Race/Ethnicity (Domestic Students Only)						
White	11%	19%	11%	9%	16%	34%
URM**	8%	15%	8%	6%	25%	37%
Asian***	8%	15%	15%	18%	6%	38%

Due to rounding, details may not total to 100%.

*Includes only American students enrolled at four-year public and private colleges and universities based in the U.S.

**Under-represented minority students, including African Americans, Native Americans, Latinos, and persons of more than one race or ethnicity.

***Includes Pacific Islanders.

Source: National Center for Education Statistics, National Postsecondary Student Aid Study, 2004

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¹Strauss, V. (18 April, 2006). "As Many Dropouts As Degrees: Poor Ph.D. Completion Rate Prod Group to Evaluate What's Lacking." *Washington Post*, A06.

²De Valero, V.F., 2001. "Departmental Factors Affecting Time-to-Degree and Completion Rates of Doctoral Students at One Land-Grant Research Institution." *Journal of Higher Education*.

³Ostriker, J.P. and Kuh, C.V. (eds.), *Assessing Research Doctoral Programs: A Methodology Study*. Washington, DC: National Research Council.

⁴After the September 11 terrorist attacks, Congress imposed two significant changes to the way foreign student visas were to be processed. One was a requirement to interview nearly 100 percent of visa applicants. The second was to use finger print scans and other "biometric checks" for applicants. For more information, see "Breaking the Visa Backlog," *Business Week*, April 24, 2006. On-Line. Available: http://www.businessweek.com/print/technology/content/apr2006/tc20060424_377280.htm.

⁵Brown, H., Syverson, P., and Doulis, M. 2004. "Assessing a Year of International Graduate Admissions: Trends and Findings from the CGS International Graduate Admissions Survey." *CGS Communicator*, (37) 10: 1-3.

⁶Strauss, A06.

By Ken Redd, Director of Research and Policy Analysis

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The 110th Congress

awarded renewals at 9,600, but will provide no inflationary increases for previously awarded multiyear grants. NIH has also announced a salary cap for individuals funded under NIH grants.

CGS routinely follows appropriations for federal agencies of interest to the graduate education community. Our appropriations chart is available at the CGS website at www.cgsnet.org, in the Public Policy section.

Based on Congress' proposed session schedule for this year, there is a six-to-seven month window for the new Democratic majority to make headway on their agenda. It also must face a Republican President with veto power. Wanting to spend the political capital from the election as soon as possible, Democratic leaders are pushing in the "first 100 hours" of the House session to pass social policy legislation including stem cell research, raising the minimum wage, ethics reform and other issues on which there is broad consensus in the party and support among more moderate Republicans. It is not clear how much else will be addressed quickly after these issues are completed, as the more difficult issues such as the war in Iraq, national security and related matters move up on the agenda and as the Republicans adjust and coalesce in their new role as the minority party. By the end of this year the 2008 Presidential race will be underway, and this will steal both Members' and media focus until the November, 2008 elections are concluded.

by Patricia McAllister, Vice President, Government Relations and External Affairs

Preparing Students for the Revised GRE® General Test: A New Model for GRE Test Preparation Workshops

Many McNair Programs provide workshops and other forms of assistance to help students navigate the various aspects of successfully applying to and gaining admission to graduate school. These workshops are a critical aspect of the overall success of McNair programs in preparing students for graduate work.

One common theme in a number of these campus-based programs is information about the GRE® General Test and how to prepare for the test. For many years the GRE Program has provided 2-3 free test preparation Workshops for campus educators annually, and a large number of McNair faculty and staff have participated in these workshops. The traditional model for these workshops has been to invite 15 campus educators to a 1.5 day workshop held at ETS in Princeton. Workshop alumni have indicated that they like the fact that the workshops involve a small number of participants. While the workshops have been quite successful in sharing detailed information about the

GRE General Test and GRE test preparation materials, the small size of the workshops has always limited the number of campuses and students that benefit from the workshops.

With the launch of the revised GRE General Test in September 2007, it is important that McNair programs have up-to-date information and test preparation materials for the revised test. With encouragement from the GRE Board, the GRE Program has been developing an array of new test preparation materials, and we wanted to see if there was a way that we could modify the very successful GRE Test Preparation Workshop for Campus Educators. Toward this goal, we decided to try an experiment with the campus educators workshops.

The logic behind the experiment was simple: Instead of inviting a small number of campus educators to ETS and covering the cost of their attendance, why not send the workshop presenters, GRE and ETS test development staff, to a location where campus educators were already meeting? More specifically, why not do it at a location where McNair staff were meeting so that we could align our efforts with that of the McNair Programs?

The first attempt at this new model of reaching out to campus educators took place on November 5-6, 2006, when the GRE Program held its first GRE

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