

Data Sources: Trends in International Graduate Student Enrollments, 2001 to 2006

The Bureau of Labor Statistics estimates that by the year 2014, the US will be facing a substantial labor shortage, as the economy will produce nearly 19 million new jobs but the total labor force is predicted to rise by less than 15 million persons (Hecker, 2005; Toossi, 2005). More than one-third of the new jobs will be available to highly educated workers, particularly those with training in engineering, computer sciences, and physical science fields (Toossi, 2005). The resulting shortage of skilled workers thus could adversely affect future American economic competitiveness and growth (Southerland, 2003).

Increasing the number of students in graduate schools will take on even greater importance in the years ahead. While attracting more Americans to graduate programs is necessary in order to meet our employment and economic needs, encouraging students from abroad to study and work in the US could also provide an importance supplement to the domestic talent pool. However, as data from the most recent CGS survey on international applications for admission to graduate schools show, the number of non-citizens seeking to attend American graduate programs still has not recovered from the losses that occurred after 2001.

Soon after September 11, 2001, Congress made significant changes to the procedures prospective international students had to follow to obtain visas for study in the United States (*Business Week*, 2006). Many fear that these changes contributed to the sharp declines in the enrollment of students from abroad in master's and doctoral degrees at American colleges and universities. CGS has responded to these concerns by conducting the International Graduate Admissions Surveys series, which measure the number of international graduate student applications, offers of admission, and total enrollments. The surveys have been conducted every year since 2004.

The 2007 International Graduate Admissions Phase I: Applications survey was sent to 468 American colleges and universities that were members of CGS as of February 2007. The survey asked these institutions to report the number of applications for admission to master's and doctoral degree programs received from prospective international students, by country of origin and field of study. Roughly 31% (145) of the survey population provided usable responses. The response rates among certain types of institutions were even

higher. Eighty percent of the ten institutions with the largest international student enrollment, 76% of the largest 25, and 68% of the largest 50 provided usable survey responses. The high participation rate among the campuses with the largest international graduate enrollment is important because collectively the 50 largest institutions enrolled more than 41% of the total international graduate student population.

The total number of non-US citizens who applied for admission to master's and doctoral programs at American colleges and universities rose 8% between 2006 and 2007. As Table 1 shows, this increase is a sharp contrast from the 28%

decrease in international applications that occurred in the 2003 to 2004 survey period, but the recent increases have not been large enough to reverse the total declines that occurred in the first two years of the survey. More than 70% of the institutions that have participated in the CGS survey since its inception still have fewer international graduate applicants this year than they did in 2004. Among these institutions, the number of international graduate admissions applications received in 2007 remains 27% below those received three years earlier. Further, the 8%

increase this year is below the 12% gain reported in last year's survey, which may indicate that the overall progress American graduate schools have been making has slowed at least temporarily.

Application increases in several fields that are vital to U.S. economic competitiveness appear to have slowed after large gains last year. Engineering had an 8% increase in international graduate admissions applications in 2007, which was well short of the 19% gain in 2006. Physical and earth sciences grew 8% in 2007 after a 15% jump in 2006. Applications in the life sciences and agriculture field increased 13% in 2007, which is an improvement over the 9% gain reported a year earlier. However, in all of these cases, the overall growth in international applications during the past two years does not appear to have erased the losses that occurred from 2003 to 2005.

The trends in graduate applications by country or origin are similarly mixed. Applications from China and India, the two largest countries of origin among international students in the US, fell sharply in both the 2004 and 2005 survey periods. However, between 2006 and 2007, the number of graduate applicants from India was up just 6%, after a surge of 26% in the prior year. Applications from China, however, increased 17% in 2007, nearly matching last year's 19% gain. The number of applications from Korea, the third largest country of origin among non-US

Table 1. Percentage Change in International Graduate Applications, 2004 to 2007

	Final Number of Applicants, 2003 to 2004	Final Number of Applicants, 2004 to 2005	Final Number of Applicants, 2005 to 2006	Preliminary Number of Applicants, 2004 to 2005
International Total	-28%	-5%	12%	8%
Country of Origin				
China	-45%	-15%	19%	17%
India	-28%	-5%	26%	6%
Korea	-14%	1%	4%	-2%
Middle East*	4%	7%	10%	9%
Field of Study				
Business	-24%	0%	16%	7%
Education	-21%	3%	1%	8%
Engineering	-36%	-7%	19%	8%
Arts & Humanities	-17%	0%	5%	12%
Life Sciences & Agriculture	-24%	-2%	9%	13%
Physical & Earth Sciences	-22%	-2%	15%	8%
Social Sciences	-20%	-2%	6%	0%

Source: Council of Graduate Schools. International Graduate Admissions Survey, Phase I: Applications Various Years.

*Middle East countries include: Bahrain, Cyprus, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen.

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graduate students, fell 2% in 2007 after experiencing a 4% gain one year earlier and a decline of 14% from 2003 to 2004. Applications from the Middle East grew 9% in 2007 after rising 10% in 2006. In general, it appears that in the largest “sending countries” the gains in applications that were achieved in the two most recent CGS international applications surveys have not been large enough to make up for the losses that occurred from 2003 to 2005.

CGS’ results are confirmed by other studies that show decreases in international students attending American colleges and universities. Data compiled by Education Sector estimates that the annual number of academic study (F-1) visas issued to current and prospective international students by the US State Department, a key barometer of international student activity, remains about 20,000 below those issued prior to 2001 (Jaschik, 2007; Yeager and Kargo, 2007). By contrast, in the five years before 2001, the number of visas issued for academic study increased an average of 11% annually (US Department of Homeland Security, 2006).

The most recent *Open Doors* report from the Institute for International Education shows that between 2001 and 2006, the total number of international graduate students attending schools in the U.S. fell from 264,749 to 259,717 (see Table 2). This decline appears to have altered some of the characteristics of students from overseas. The share of students from the Middle East has fallen by one-half, even though the number of graduate program applications from this region has increased. The proportion of students from China also fell slightly, while the proportion from India rose 3

percentage points.

The *Open Doors* report shows that the percentage of international students who were seeking master’s degrees declined by 8 percentage points, but the proportion of those in doctoral programs rose by 9 points. The share in the mathematics/computer sciences fields fell slightly. Additionally, women constituted a greater share of international students.

The CGS survey results, along data from IIE and other organizations, suggest that while US graduate schools have made substantial strides in their efforts to increase international graduate student enrollments, they still have not fully recovered from the declines in applications and enrollments that occurred in the early part of the 21st century. These declines have come at a time when a looming labor shortage could limit future economic growth. It is now more important than ever that US policies are initiated that will strengthen both American and international attendance and success at the graduate level, and the need to monitor international student enrollment activity should continue. The results from the next phase of the CGS international survey series, Phase II: International Graduate Admissions, scheduled to be launched this summer, may provide very important information concerning the future direction of international graduate student attendance in the United States.

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Table 2. Characteristics of International Graduate Students at U.S. Graduate Colleges and Universities, 2001-2002 to 2005-2006

	2001-2002 264,749	2005-2006 259,717
Est. Total Enrollment		
Gender		
Men	62%	59%
Women	38%	41%
Countries/Regions of Origin		
China	19%	18%
India	18%	21%
Korea (North & South)	9%	9%
Middle East**	6%	3%
All Others	48%	49%
Academic Level		
Master's	52%	44%
Doctoral	31%	42%
Other	17%	14%
Major Fields of Study		
Business & Management	17%	15%
Education	3%	4%
Engineering	21%	23%
Arts & Humanities	9%	8%
Physical & Life Sciences*	13%	15%
Mathematics & Computer Sciences	14%	11%
Social Sciences	9%	9%
All Others	14%	15%

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

*Includes agriculture.

**Middle East countries include: Bahrain, Cyprus, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Palestinian Authority, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, and Yemen.

Source: Institute for International Education, *Open Doors: Report on International Educational Exchange*. 2002 and 2006 Editions.