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Education and Training Funded by the H-1B Visa Fee and the Demand for Information Technology and Other Professional Specialty Workers

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Summary

The cap of 195,000 on newly approved H-1B visas, which enable employers to temporarily import workers to fill professional specialty occupations, is set to revert to 65,000 on October 1, 2003. On that date, as well, the user fee that has funded education and training programs intended to increase the supply of high-skilled U.S. workers is due to expire.

The underlying motivation for Congress' raising the limit on H-1B visas in 1998 and again in 2000, from the level set by the Immigration and Nationality Act of 1990, was the perceived shortage of workers with information technology (IT) skills (e.g., computer systems analysts). Congress also initiated a more long-term remedy to the seeming mismatch between the qualifications of U.S. workers and the technical skill requirements of U.S. employers: the imposition of a user fee on employers who file petitions to bring into the country, to extend the stay of, or to hire from other U.S. employers nonimmigrant professionals in order to fund programs intended to prepare U.S. students and workers for high-skilled jobs and thereby to reduce employers' reliance on H-1B workers. Most of the user fees are allocated to two programs authorized in 1998, namely, the Computer Science, Engineering, and Mathematics Scholarship (CSEMS) program in the National Science Foundation and the Technical Skills Training Grant program in the Department of Labor (DOL). Between spring 2000 and summer 2002, the CSEMS program awarded $129.3 million to colleges and universities to provide scholarships to low-income, academically talented students enrolled in undergraduate and graduate degree programs in these disciplines. Through July 1, 2003, the DOL program awarded $228.6 million to local workforce investment boards and businesses to provide training in technical skills to employed and unemployed workers. Thus far, more than 12,500 students have received scholarships and more than 56,000 individuals have participated in training. Given the few years in which the programs have been in effect and the multi-year duration of awards, many scholarship recipients have not yet completed their education and many workers have not yet completed their training.

The 108th Congress is reconsidering the H-1B visa cap and user fee in a much-changed economic environment. In March 2001, the economy entered a recession from which it has been slow to recover. IT-intensive industries remain especially hard hit. The reduced demand for IT workers is reflected in the number of approved new H-1B visas having fallen short of the cap in recent years. If the ceiling drops by two-thirds on October 1, 2003, however, employers of H-1B workers in occupations in which demand has remained strong would face heightened competition for visas — particularly in a revival of the IT sector. The education and training programs paid for with H-1B user fees would cease operation if the user fee were allowed to expire, thereby eliminating one means of mitigating the alleged long-term skills mismatch. This report will be updated for legislative activity concerning the user fee-funded education and training programs. (For information on legislative activity concerning the visa cap, see CRS Report RL30498, *Immigration: Legislative Issues on Nonimmigrant Professional Specialty (H-1B) Workers*.)

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The elevated cap on H-1B visas, which enable employers to temporarily import alien workers to fill professional specialty occupations, is set to expire on October 1, 2003.[1] So, too, is the user fee that has funded activities intended to increase the supply of high-skilled U.S. workers and thereby to reduce reliance on H-1B workers. Specifically, the ceiling on H-1B visas issued for initial employment at non-exempt employers will revert from 195,000 to 65,000, the limit established under the Immigration and Nationality Act of 1990. In addition, certain education and training programs of the National Science Foundation (NSF) and the U.S. Department of Labor (DOL) will lose their funding source, absent congressional action.

In 1998 and again in 2000, the underlying motivation for Congress' raising the limit on H-1B visas was the perceived shortage of workers with information technology (IT) skills (e.g., computer systems analysts and programmers, data communications and network personnel, and computer systems technical support). The economy flourished from the mid-1990s through 2000. This was particularly true of companies in "high tech" or IT-intensive industries (e.g., electronics manufacturing, telecommunications, and software services). The demand for workers with IT skills also was expanding outside the high tech sector as firms increasingly utilized computer-based technologies.

The 108th Congress is reconsidering the H-1B visa cap and user fee in a much different economic environment than prevailed when the issue was addressed by earlier congresses. In March 2001, the economy entered a recession from which it has been slow to recover. High tech industries were and continue to be especially hard hit. This is reflected in the number of approved H-1B visas for new admissions having fallen below the FY2001 and FY2002 cap. If the ceiling drops by two-thirds to 65,000, however, employers of workers in professional specialty occupations in which demand has continued to be strong (e.g., health care) could face heightened competition for visas — particularly in a revival of the high tech sector.

In addition, the NSF and DOL programs paid for with H-1B user fees would cease operation if the user fee were allowed to expire without determining an

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[1] In the Immigration and Nationality Act of 1990, a professional specialty occupation is defined as one that requires the application of a body of highly specialized knowledge, the attainment of at least a bachelor's degree (or its equivalent), and the possession of a license or other credential to practice the occupation if required.

alternative funding source. Some would argue that the need for these programs no longer exists because there currently are adequate numbers of workers already qualified to fill employers' demand for IT and other professional specialty workers. Others would counter that this is only a temporary (cyclical) situation, and if these programs were to stop producing workers who possess the requisite qualifications for high-skilled, high-paying occupations that are expected to grow relatively quickly in the long-run, Congress would again feel impelled to raise H-1B visa levels when the economy more fully recovers.

This report begins by discussing the provisions of the relevant immigration legislation passed in 1998 and 2000, and then focuses on the education and training programs funded with H-1B user fees. The report next briefly examines the changed supply-demand situation for IT workers. It closes by analyzing the occupational mix of workers with newly approved H1-B visas and the implications of a much reduced cap for employers of temporary alien workers with non-IT skills.

Legislative Background

In recent years, Congress twice turned to immigration as a short-term means of alleviating a perceived shortage of U.S. workers with IT skills. It also passed a more long-term remedy to the seeming mismatch between the qualifications of U.S. workers and the technical skill requirements of U.S. employers that has prompted employers to utilize H-1B workers: the imposition of a user fee dedicated to funding programs intended to prepare U.S. students and workers for high-skilled jobs.

Round I

Concern about an IT labor shortage culminated during the 1998 congressional debate over raising the ceiling on H-1B visas for skilled temporary alien (i.e., nonimmigrant) workers. The 105th Congress chose, in Title IV (the American Competitiveness and Workforce Improvement Act of 1998, ACWIA) of P.L. 105-277 (the FY1999 Omnibus Consolidated and Emergency Supplemental Appropriations Act), to raise the cap from 65,000 on new admissions of nonimmigrant professionals who work in specialty occupations to 115,000 annually in FY1999 and FY2000, and to 107,500 in FY2001.[2] The legislation also imposed a user fee on employers that filed petitions to bring into the country, to extend the stay of, or to hire from other U.S. employers nonimmigrant professionals from December 1, 1998 through September 30, 2000. Thus, the cap relates to visas approved for initial employment of temporary aliens while the user fee relates to visa petitions for initial and continuing employment of temporary aliens.

The fee of $500 per H-1B visa petition was to be used largely to fund math, engineering, or science education and to fund technical skills training in order to better match the supply of qualified U.S. workers with the nature of employer

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[2] In addition to computer-related jobs, employers in recent years have obtained relatively large numbers of H-1B visas for such occupations as electrical and electronic engineers; accountants and auditors; and college and university faculty.

demand. Most fees deposited into the Nonimmigrant Petitioner Account were allocated to activities carried out by the NSF and the DOL as follows:

- ACWIA authorized and funded, through 28.2% of the user fees, the Computer Science, Engineering, and Mathematics Scholarships (CSEMS) program to provide awards to low-income, academically talented students enrolled in undergraduate and graduate degree programs.
- The NSF received an additional 8% of all fees, with half going to award merit-reviewed grants under the National Science Foundation Act of 1950 (Section 3(a)(1)) for programs that provide year-round K-12 academic enrichment courses in mathematics, engineering, or science and half going to carry out systemic reform activities in K-12 education under Section 3(a)(1) of the 1950 Act.
- Congress directed that the majority of the user fees — 56.3% — should go to the DOL to fund a demonstration program under Section 452(c) of the Job Training Partnership Act (JTPA) or under Section 171(b) of the Workforce Investment Act (WIA), which replaced JTPA. The grant program was to provide training in technical skills to both employed and unemployed workers.
- DOL was awarded an additional 6% of the user fees to reduce the processing time of visa applications and for enforcement activities.[3]

Round II

The then-Immigration and Nationalization Service (INS) announced that the increased cap of 115,000 H-1B visas for FY1999 had been reached in June. The 115,000 limit for FY2000 was reached even earlier in the year (March).

The 106th Congress responded with passage of the American Competitiveness in the Twenty-First Century Act of 2000 (P.L. 106-313). The Act raised the cap on newly approved H-1B visas to 195,000 annually between FY2001 and FY2003 while making additional visas available for FY1999 and FY2000. It exempted from the higher limit on admissions for initial employment aliens temporarily employed by institutions of higher education, nonprofit research organizations or governmental research organizations. Professional specialty workers who seek extensions or modifications to their initial H-1B employment also do not count against the cap (i.e., the cap does not apply to continuing employment). Separate legislation (P.L. 106-311) raised the user fee to $1,000 effective December 18, 2000, and extended it through September 30, 2003.

P.L. 106-313 amended ACWIA's allocation of H-1B fees and the programs the fees funded as follows:

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[3] The remainder of the user fees (1.5%) went to the Attorney General to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers.

- The share going to NSF's CSEMS program was lowered to 23.5% from 28.2%. The amount of the scholarships was raised from $2,500 to $3,125. In addition, scholarships could be renewed for up to 4 years.
- The additional share provided to the NSF for K-12 activities almost doubled to 15%. The funds are to be expended to carry out a direct or matching grant program to support private-public partnerships in K-12 education and to continue to carry out systemic K-12 reform activities.
- The share going to DOL's Technical Skills Training Grants was lowered slightly to 55.0% from 56.3%. The Act stated that although the training does not have to develop skill levels commensurate with a 4-year college degree, it does have to prepare workers for a wide range of positions along a career ladder. It mandated that at least 80% of the grants be awarded for training employed and unemployed workers in skills required in high technology, information technology and biotechnology.[4] No more than 20% of the grants may be awarded to train persons for a single specialty occupation. P.L. 106-313 further directed that the Secretary of Labor, in consultation with the Secretary of Commerce, award 75% of the grants (with a matching requirement of 50%) to WIA's local workforce investment boards or consortia of such boards in a region.[5] The remaining 25% of grants (with a matching requirement of 100%) must go to partnerships consisting of at least two businesses or a business-related nonprofit organization that represents more than one business (e.g., trade association).
- The 6% that went to DOL under ACWIA for reducing the processing time of H-1B applications fell to 5%.[6]

Program Activity

P.L. 106-313 also required the NSF and DOL to submit a report, 1 year after the date of enactment (October 17, 2000), to the Committees on the Judiciary of the House and the Senate. The reports were to discuss the tracking system employed to monitor the performance of activities funded through the Nonimmigrant Petitioner Account and the number of persons who completed training and entered the high-skilled workforce through these programs.

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[4] As stated in the legislation, these fields include software and communications services, telecommunications, systems installation and integration, computers and communications hardware, advanced manufacturing, health care technology, biotechnology and biomedical research and manufacturing, and innovation services.

[5] Under ACWIA, 100% of the grants went to these bodies.

[6] The 1.5% that went to the Attorney General to reduce the processing time of H-1B petitions and to improve the enumeration of nonimmigrant workers under ACWIA remained unchanged under P.L. 106-313.

NSF

Evaluations. In "Report on H-1B Nonimmigrant Petitioner Receipts, 2001," the NSF noted that three competitions were held between 1999 and 2001 for awards through the CSEMS program. A total of 352 multi-year awards were granted to 2-year and 4-year colleges and universities. A majority of the individual scholarships the institutions funded from these awards went to students working full-time toward a bachelor's degree (72%) or associate degree (21%).

The first scholarship recipients matriculated in fall 2000. Consequently, just a few recipients (181) had graduated by summer 2001. Grantees reported that the career goals of these graduates accorded with the intent of the scholarships, namely, they were interested in employment in such areas as information systems, semiconductor technician, manufacturing design engineer, network technician (internet security), mining engineering technology, and electrical engineering. Graduates obtained positions at such employers as Lucent, the National Security Agency, Wal-Mart (as a computer programmer), Intelligent Epitaxy Technology, Texas Instruments, ST Microelectronics, 3M, IBM, Hallmark Cards (as a computer technician), and Sandia National Laboratory.

In addition to the CSEMS program, which was authorized in P.L. 105-277 and continued in P.L. 106-313, the latter Act authorized another ongoing NSF program funded with H-1B user fees, namely, "Private-Public Partnerships in K-12." It involves partnerships between industry and educational institutions, for example, that focus on such diverse activities as materials development, math and science teacher professional development, use of technology in the classroom, and system-wide K-12 reform in economically disadvantaged areas. The report stated that, given the program's K-12 focus, its direct impact on entrants into the high-skilled workforce was unclear.

More recently, the NSF has contracted for an evaluation of the CSEMS program. It is at an early stage.

Funding. The total amount of fees allocated to the NSF from the Nonimmigrant Petitioner Account is shown in **Table 1**. As previously noted, most of the NSF's share of fees has gone to the CSEMS program. In spring 2000, 114 awards totaling $22.5 million were announced; in spring 2001, 110 awards totaling $24.3 million were announced, as were 72 supplements (in the amount of $24.0 million) to 2000 awards to extend them from 2 years to 4 years; in summer 2001, 77 awards totaling $26.5 million were announced; and in summer 2002, 93 awards totaling $32.0 million were announced.[7] Between 2000 and 2002, then, the NSF provided $129.3 million in H-1B user fees to colleges and universities in an effort to increase the supply of individuals with skills in computer science, engineering, and

[7] Information provided to CRS by NSF, May 18, 2003.

math. Some 12,526 low-income undergraduate and graduate students have thus far received CSEMS scholarships.[8]

According to its latest solicitation, which closed in February 2003, the NSF anticipates that the CSEMS program will have about $30 million available from which to make some 90 awards to colleges and universities. Each award is not expected to exceed $100,000 per year for up to 4 years to cover scholarships, administrative costs, and student support costs.[9] Results of the competition are due this summer.

Table 1. H-1B User Fees Allocated to the CSEMS Program and K-12 Activities Pursuant to P.L. 105-277 and P.L. 106-313

Fiscal year	Funding level (in millions of dollars)
2000[a]	25.06
2001[b]	78.51
2002[c]	57.31
2003 (estimate)	65.68

Source: National Science Foundation budget requests.

[a] Reflects the CSEMS program and K-12 activities under P.L. 105-277.
[b] Reflects the CSEMS program and the changeover to K-12 activities under P.L. 106-313.
[c] The NSF anticipated that the funds flowing from P.L. 105-277 would have been fully obligated by the end of FY2002.

DOL

Evaluations. To date, the Department has not released its report to Congress as mandated by P.L. 106-313. It has completed two other studies of the Technical Skills Training Grant program. The first report provides a snapshot, as of spring 2001, of six among the first 43 grants awarded. The second report focuses on "best practices" derived from six other grants among the same 43 grants, and covers the period from late 2001 to early 2002.[10]

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[8] In a May 21, 2003 communication with CRS, the NSF noted that the figure does not include students in projects that had not yet reported, which represent about 10% of the total. Those projects that are early in the grant period also may ultimately report more students receiving scholarships than they have thus far.

[9] An award can include up to 5% of the total scholarship amount for project management and administration (e.g., confirmation of scholarship applicant's eligibility) and up to 5% for student-support infrastructure (e.g., recruitment of students from groups underrepresented in CSEM fields, retention of CSEMS recipients to degree completion, and support in employment placement).

[10] The reports are available at [http://www.doleta.gov/h-1b].

In 2001, DOL awarded a 3-year contract for a process evaluation of the program (i.e., one that focuses on implementation issues). As of May 2003, the first two rounds of site visits had been completed and the final two rounds had begun. Among other things, the study is to describe whether and in what ways grantees have innovated to deal with less traditional target groups (e.g., employed workers) and with providing a higher level of skills training than usual, as well as identify problems concerning implementation and sustainability of the program.[11] The Department also is considering whether to undertake an experimental evaluation of the program (i.e., one in which participants are randomly assigned to one or more treatments, such as the High Skills Training Grant program, and a control/comparison group).

Although ACWIA did not specify the fields in which training was to occur, the Department characterized the training to be in high-skilled occupations experiencing shortages, specialty occupations for which employers had filed H-1B applications, high-growth industries, and in-demand occupations in local labor markets. Based on a survey of the 43 initial grantees, the General Accounting Office (GAO) found that most provided training in IT jobs.[12] Other fields included health care, biotechnology, and science (e.g., registered nurse, licensed practical nurse, radiology technician, and certified nursing assistant), engineering and manufacturing (e.g., electrical engineer, mechanical engineer, and electronics technician), and telecommunications (e.g., telecommunications technician). The GAO report further noted that the training prepared individuals for a range of skill levels within occupations, not just at the baccalaureate level, which — depending upon the trainee's initial skill level — would have been difficult to accomplish within the grants' 2-year period. One-year, no-cost (to the government) extensions were allowed. However, the previously mentioned "best practices" evaluation conducted for DOL recounted that the provision of an additional year did not completely resolve the grant period's hindrance to implementing some degree-granting programs

> because grantees cannot plan for the option year as part of their initial submissions. Some site administrators indicated that it would be more useful if the programs were for 3 years to 5 years.[13]

As previously stated, P.L. 106-313 subsequently (a) clarified that the training need not develop skill levels commensurate with a 4-year college degree but that workers should be prepared for a broad range of positions along a career ladder, and (b) specified the industries whose skill requirements the training grants are to be directed toward fulfilling. (See section in this report entitled Legislative Background, Round II.)

Beginning with its January 2003 grant solicitation, DOL has attempted to take into account modifications to the program contained in P.L. 106-313 and comments

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[11] Information provided to CRS by DOL, May 29, 2003.

[12] U.S. General Accounting Office, *High-Skill Training: Grants from the H-1B Visa Fees Meet Specific Workforce Needs, but at Varying Skill Levels*, GAO-02-881, Sept. 2002.

[13] Burt S. Barnow, *Exemplary Practices in High-Skill U.S. Department of Labor H-1B Training Programs*, March 2002, pp. xiv-xv.

made by evaluators, among others. For example, the solicitation emphasizes that a goal of the grants is the provision of higher than preparatory or entry-level training so that participants attain skill levels at or approaching those of H-1B workers. It explains to grant applicants that candidates for training should already have the prerequisites for the occupational training being proposed by grantees. (Under prior awards, some sites had provided remedial courses to persons who lacked the background to participate.[14]) The solicitation identifies as priorities the provision of higher levels of training in occupations for which H-1B visas have been approved and in fields referenced in P.L. 106-313. It accords less of a priority to training in lower level health care fields and other non-professional specialty occupations. The grant period has been lengthened to 36 months, with an additional 1-year no-cost extension possible, to allow adequate time for participants to complete the higher level training being offered.

Funding. The DOL began to solicit proposals for Technical Skills Training Grants once sufficient funds had been distributed from the Nonimmigrant Petitioner Account. As shown in **Table 2**, 43 grants totaling $95.6 million were awarded under ACWIA in 2000. The average award amount was slightly more than $2.2 million.

Table 2. Awards of Technical Skills Training Grants

Effective date of grants[a]	Amount of grant (in millions of dollars)	Number of grants
March 31, 2000	12.4	9
August 1, 2000	29.2	12
November 15, 2000	54.0	22
December 14, 2001	24.4	9
March 15, 2002	8.6	3
March 15, 2002	14.6	5
May 1, 2002[b]	34.5	14
June 15, 2002	19.1	7
October 1, 2002	15.6	7
December 16, 2002	5.9	2
April 1, 2003	10.3	4
July 1, 2003	14.7	5

Source: U.S. Department of Labor.

[a] The 2000 grants were issued while P.L. 105-277 was in effect. Subsequent awards were issued under P.L. 106-313.

[b] These grants went to businesses or business partnerships. They were awarded under P.L. 106-313's requirement that these organizations should receive 25% of DOL's share of H-1B user fees devoted to training. All other grants shown in the table were awarded to local workforce investment boards or regional consortia of local boards.

[14] Ibid.

Under P.L. 106-313, the Department awarded 56 grants totaling about $147.7 million through July 1, 2003. Forty-two grants, in the amount of $113.2 million, went to WIA's local workforce investment boards or consortia of such boards in a region. The average amount of these awards was $2.7 million. Fourteen grants, in the amount of $34.5 million, went to partnerships consisting of multiple businesses or business-related nonprofit organizations that represent multiple businesses. The average amount of these awards was almost $2.5 million.

Between March 31, 2000 and July 1, 2003, then, a total of $243.3 million in Technical Skills Training Grants had been awarded. The grants account for 56% of the $436.8 million in H-1B funds expected to have been allocated to DOL through FY2003. (See **Table 3**.) Additional grants, expected to total almost $200 million, will be available under a January 2003 solicitation to local workforce investment boards or regional consortia of boards. In its latest grant solicitation (June 2003), the Department stated that it anticipates about $50 million will be available to business partnerships or business-related nonprofit organizations. The business-led partnerships may also include any educational, labor, faith-based or community organization, or workforce investment board. Each grant is not expected to exceed $3 million.

Table 3. H-1B User Fees Allocated to the Technical Skills Training Grant Program Pursuant to P.L. 105-277 and P.L. 106-313

Fiscal year	Funding level (in millions of dollars)
1999	41.38
2000	75.59
2001	131.49
2002	90.73
2003 (estimate)	97.63

Source: U.S. Department of Labor.

As of May 2003, 19 grants had been completed.[15] All the completed grants had been awarded under P.L. 105-277. Out of a total of 56,066 individuals to be trained, 13,915 participants were in training and 21,502 participants had completed training as of December 30, 2002.[16] Grantees have reported to DOL that, among participants who have completed training, 4,422 individuals received promotions or wage increases, 7,695 earned certificates or degrees, and 4,460 were placed in new jobs. (These categories are not mutually exclusive.)

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[15] Information provided to CRS by DOL, May 28, 2003.

[16] The remaining 20,649 individuals represent, in part, participants whom grantees expect to train but had not enrolled in training as of Dec. 30, 2002.

Developments in the U.S. Labor Market for IT Workers

The labor market prospects of IT and many other workers has reversed course in recent years as employers have curtailed hiring and/or conducted layoffs in response initially, to the recession, and subsequently, to the sluggish pace of economic growth. The data analyzed below show the harsher reality of recent labor market conditions for IT workers. Their much-changed circumstance also is reflected in firms' importing many fewer temporary workers in specialty occupations: H-1B visas approved for initial employment at non-exempt employers did not reach the legislatively set cap of 195,000 in either FY2001 or FY2002, according to the INS, when they numbered 163,600 and 79,100, respectively.[17]

Employment

About 2.5 million persons worked in IT jobs as computer systems analysts, computer engineers, computer scientists and computer programmers in 2000 — more than twice the number in 1989, the prior peak in the business cycle. (See **Table 4**.) Employment in these occupations increased by 121% between 1989 and 2000, which was well above the average increase across all occupations of almost 17%, according to U.S. Bureau of Labor Statistics' data.

Table 4. Employment in Selected IT Occupations

(numbers in thousands)

Year	Computer systems analysts, engineers and scientists	Computer programmers	Total, computer-related occupations
1989	566	561	1,127
2000	1,797	699	2,496
2002	1,705	585	2,290

Source: U.S. Bureau of Labor Statistics. *Employment and Earnings*, Jan. issues.

Note: The data are derived from the Current Population Survey, a household survey.

With the advent of the recession in March 2001, the number of employed IT workers dropped sharply, by 8%, between 2000 (the latest peak in the business cycle) and 2002. Employment contracted at both high-tech manufacturers (e.g., electronic components and accessories, communications equipment, and computers and office equipment) and high-tech services providers (e.g., communications and software

[17] A total of 103,584 H-1B visas were approved for initial employment in FY2002, including the 79,100 individuals who were subject to the cap. An additional 93,953 H-1B visas were approved for persons who sought extensions or modifications to their initial H-1B employment. Thus, the INS approved a total of 197,537 H-1B visas for initial and continuing employment in FY2002.

services).[18] In contrast, employment across all occupations fell by less than 1%, according to U.S. Bureau of Labor Statistics' data.

Unemployment

Between 2000 and 2002, the unemployment rate more than doubled — rising from 2.0% to 5.0% — among computer systems analysts, computer engineers, and computer scientists. (See **Table 5**.) It almost quadrupled — rising from 1.6% to 6.1% — among computer programmers. Over the same period, workers in the professional specialty occupational group and in the technicians and related support occupational group averaged smaller increases in their unemployment rates.

Table 5. Unemployment Rates in Selected Occupations

Occupation	1989	2000	2002
All professional specialty occupations	1.7	1.7	2.8
Computer systems analysts, engineers & scientists	1.4	2.0	5.0
All technicians and related support occupations	2.4	2.1	3.7
Computer programmers	1.6	1.6	6.1

Source: U.S. Bureau of Labor Statistics. Unpublished data from the Current Population Survey.

Note: Because of the fairly small number of workers in computer-related occupations, year-to-year changes in their unemployment rates must be several tenths of a percentage point (0.6-0.9) to be considered statistically significant.

Short-Run Prospects

According to a survey of hiring managers at IT and non-IT firms, prospects are not good in the short-run for a substantial rebound in the employment of workers with computer-related skills. Recent increases in IT jobs have come not so much from greater hiring activity as from a slowdown in the pace at which employees are being laid off. The Information Technology Association of America (ITAA) had forecast a stronger recovery, but the weak demand projections of hiring managers for 2003 have erased its earlier optimism. Notably, "[e]mployers express only a modest sense of urgency for filling open slots ... most organizations were able to meet or exceed their IT hiring plans."[19]

The ITAA identified offshore outsourcing (i.e., having work performed outside the United States) as one nascent factor contributing to the dramatically changed situation of IT workers beyond

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[18] AeA, *Tech Employment Update*, 2003.

[19] ITAA, *2003 IT Workforce Survey*, May 5, 2003, pp. 8 and 10.

> the stock market reverses and consequent investor flight, the elimination of many dot.com and telecom firms (and the high tech business supporting those firms), large-scale capital expense reductions, the Year 2000 "overhang" of new systems and software implemented to replace older, date vulnerable assets and the recession.[20]

Results from the ITAA survey of hiring managers show that 6% of all firms have moved IT jobs to other countries, with the figure doubling among IT companies. Other sources confirm the growing interest in sending IT work to other nations.[21]

The Occupational Mix of H-1B Visas Approved for Initial Employment

Computer-related occupations have, in recent years, accounted for a majority of H-1B visas granted to temporary workers for initial employment. In FY2001, for example, their share of newly issued H-1B visas was about 55%.[22] As shown in **Table 6**, no other occupational group approached this size. Between FY2000 and FY2001, the number of workers approved for initial employment as systems analysts and programmers grew by 50%. The 33,460 increase in this large group of IT workers alone accounted for almost 52% of the total increase in approved new H-1B petitions with known occupation.

In FY2001, the single largest industry importing new H-1B employees was computer systems design and related services, at 84,853 or almost 47% out of 181,722 new petitions approved with known industry. Colleges, universities, and professional schools ran a very distant second, at 9,817 newly approved H-1B employees or more than 5% of the total. Two other industries — architectural, engineering, and related services at 8,047; and management, scientific, and technical consulting services at 7,800 — each comprised over 4% of approved petitions for initial employment with known industry.[23]

Employers who have been obtaining H-1B visas on behalf of workers in specialty occupations in which demand has continued to be strong (e.g., medicine and

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[20] Ibid., p. 4.

[21] For additional information see "Companies Expected to Boost Offshore Outsourcing," *Computerworld*, Feb. 17, 2003; "Hot Export: Tech Jobs," *Hartford Courant*, Jan. 6, 2003; "Offshore Job Competition to Increase," *eWeek*, Jan. 31, 2003; and "Offshore Outsourcing Grows to Global Proportions — U.S. Companies Extend Their Search Beyond India for IT Help Overseas," *Information Week*, Feb. 11, 2002.

[22] P.L. 105-277 required the INS to report annually on, among other things, the occupations of aliens approved for H-1B visas. The first report covered FY2000. Note: The data for the 15-month period (May 1998-July 1999) shown in **Table 6** were derived from a sample of H-1B visas approved for initial employment.

[23] U.S. Immigration and Naturalization Service, *Report on Characteristics of Specialty Occupation Workers (H-1B), Fiscal Year 2001*, July 2002. Note: FY2001 was the first full year for which industry data were available.

health) could find themselves facing heightened competition for visas if the cap drops by two-thirds to 65,000. The likelihood of their being crowded out of the competition for visas will increase in a revival of the high tech sector. Congress had been sufficiently concerned about the possibility of some employers being unable to obtain H-1B visas that, even as it was raising the ceiling on admissions for initial employment to 195,000, it created an exemption from the limit for institutions of higher education, nonprofit research organizations or governmental research organizations. As shown in **Table 6**, in FY2001 — half-way through which the economy entered a recession — 89,403 petitions for initial employment of workers with other than computer-related skills were approved.[24] (For further information on the characteristics of H-1B workers and on legislative activity concerning the H-1B visa cap see RL30498, *Immigration: Legislative Issues on Nonimmigrant Professional Specialty (H-1B) Workers*.)

Table 6. H-1B Petitions Approved for Initial Employment by Occupation of Beneficiary

Occupations in	5/98-7/99[a]	FY2000	FY2001
Total, occupation known	134,400	135,362	200,116
Computer-related	*76,300*	*74,551*	*110,713*
Systems analysis & programming	71,700	67,053	100,513
Computer systems technical support	[a]	1,186	1,480
Data communications & networks	[a]	1,109	1,397
Computer-related occupations, nec*	4,600	4,787	6,907
Architecture, Engineering, and Surveying	*9,500*	*17,086*	*25,365*
Electrical & electronics engineering	6,500	6,342	9,538
Mechanical engineering	[a]	2,466	3,019
Industrial engineering	[a]	1,018	1,385
Civil engineering	[a]	n.a.	1,825
Architectural occupations	[a]	1,449	2,091
Architecture, engineering and surveying, nec*	3,000	3,331	4,585
Administrative specializations	[a]	*11,468*	*15,573*
Accountants, auditors & related occupations	3,800	5,219	6,774

[24] Like the other statistics in this section, the figure represents all approved H-1B petitions for initial employment, not just those that count against the visa cap.

Occupations in	5/98-7/99[a]	FY2000	FY2001
Budget and management systems	[a]	1,651	2,264
Sales & distribution management	[a]	1,188	1,638
Occupations in administrative specializations, nec*	[a]	1,625	2,271
Education	[a]	*7,210*	*11,733*
College & university education	4,000	5,152	7,833
Preschool, primary school, and kindergarten education	[a]	n.a.	1,799
*Managers and officials, nec**	[a]	*4,366*	*8,050*
Medicine and health	[a]	*4,734*	*6,646*
Physicians & surgeons	[a]	1,921	2,193
Medicine & health, nec*	[a]	1,380	2,003
Life sciences	[a]	*2,921*	*4,143*
Biological sciences	[a]	2,160	3,039
Social sciences	[a]	*3,103*	*4,212*
Economics	[a]	2,904	3,920
Mathematics and physical sciences	[a]	*2,364*	*3,627*
Chemistry	[a]	959	1,471
Miscellaneous professional, technical, and managerial	[a]	*2,734*	*3,692*
Art	[a]	*1,847*	*2,283*
Writing	[a]	*906*	*1,309*
Law and jurisprudence	[a]	*755*	*1,180*
Fashion models	[a]	*614*	*790*
Entertainment and recreation	[a]	*449*	*509*
Museum, library, and archival sciences	[a]	*186*	*230*
Religion and theology	[a]	*68*	*61*
Occupation unknown	40,800	1,425	963

Source: Immigration and Naturalization Service, *Characteristics of Specialty Occupation Workers (H-1B), May 1998 to July 1999*; *Report on Characteristics of Specialty Occupation Workers (H-1B), Fiscal Year 2000*; and *Report on Characteristics of Specialty Occupation Workers (H-1B), Fiscal Year 2001*.

Note: Includes all approved petitions for initial employment, not just those that apply against the H-1B cap.

n.a. = not available.

[*] Not elsewhere classified.

[a] The May 1998 to July 1999 (15-month) estimate is based on a sample of 4,217 approved petitions for initial employment. Because the data are derived from a sample, they are not as detailed as the occupational statistics that ACWIA subsequently required the INS to provide annually for all H-1B nonimmigrants.