H1B Jobs: Filling the Skill Gap

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Comparing the demand of computer technology versus finance jobs reveals an opportunity for companies to address their gap in high-skilled labor.

Business leaders in industries such as computer technology and finance claim that there are not enough high-skilled Americans to meet their demand for workers. They further argue that the dearth of qualified employees stifles industry competitiveness and U.S. economic growth. Consequently, firms have lobbied Washington since 2004 to increase the number of H1B visas, which grant temporary entrance to highly skilled immigrant workers.

Like most immigration issues, the debate over H1B visas is politically contentious. While industry is calls for more visas, labor argues that foreign workers are taking jobs Americans can fill. Efforts in Congreess stalled in 2013, and there seems little chance for a consensus any time soon.

But industry leaders contend that real economic issues remain. So behind the debate over H1B visas lies a more pressing question: Where will this country find the talent it needs to remain competitive and drive economic growth?

In the absence of Congressional action on immigration policy, this AIER Issue Brief seeks to identify solutions that businesses themselves can employ to address their labor shortage problems. This brief examines the labor market of high-skilled workers and the distribution within it of

TABLE 1. TOP 10 OCCUPATIONS REQUESTING H1B VISAS IN FY 2013

OCCUPATION	VISAS CERTIFIED*
Computer Systems Analysts	235,028
Computer Programmers	146,710
Computer Occupations, All Other	105,147
Software Developers, Applications	70,960
Computer and Information Systems Managers	48,483
Software Developers, Systems Software	21,908
Accountants and Auditors	21,632
Management Analysts	18,455
Network and Computer Systems Administrators	19,399
Financial Analysts	13,346
All other	208,397
Total	909,465
TOP 10 VISAS CERTIFIED AS % OF TOTAL	77%

*These numbers reflect visas in demand, not visas issued by the State department.
Source: Office of Foreign Labor Certification. U.S. Department of Labor

TABLE 2. HIGH-SKILLED WORKERS, 2010-2012

OCCUPATION	U.S. CITIZEN	H1B*	TOTAL	H1B
Computer Occupations, All Other	332,984	22,842	355,826	6%
Network and Computer Systems Administrators	220,908	13,057	233,965	6%
Software Developers	727,230	209,816	937,046	22%
Computer Programmers	413,371	49,419	462,790	11%
Computer Systems Analysts	419,471	56,007	475,478	12%
Computer and Information Systems Managers	491,738	38,229	529,967	7%
TOTAL COMPUTER TECHNOLOGY OCCUPATIONS	2,605,702	389,370	2,995,072	13%
Accountants and Auditors	1,930,461	103,449	2,033,910	5%
Financial Analysts	69,116	5,422	74,538	7%
Management Analysts	595,510	45,569	641,079	7%
TOTAL FINANCE OCCUPATIONS	2,595,087	154,440	2,749,527	6%

*AIER Estimate

TABLE 3. GENDER MAKEUP OF FINANCE AND COMPUTER TECHNOLOGY JOBS, 2010-2012

OCCUPATION	MALE	%	FEMALE	%
Technology Occupations	2,218,386	74	776,686	26
Financial Occupations	1,229,003	45	1,520,524	55

	AMERICAN WORKERS		H1B WORKERS	
	% MALE	% FEMALE	% MALE	% FEMALE
Technology Occupations	73	27	78	22
Financial Occupations	45	55	48	52

Source for Tables 2 and 3: AIER Analysis of Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

American and H1B visa holders, and then it identifies a domestic source of high-skilled talent that has been hiding in plain sight.

COMPUTER TECHNOLOGY AND FINANCE LEAD THE VISA CHASE

The H1B visa is intended to allow high-skilled workers to come to the U.S. for three years with a three-year extension. While there is currently an annual cap of 65,000 new worker visas that can be issued, each year companies' requests often far exceed this cap within days after the application opens on April 1. (As of this writing, 124,000 visas have been requested this fiscal year alone.)

In 2013 businesses made 909,465 certified requests for H1B visas. Table 1 on page 1 shows that the top 10 demanded H1B occupations were in either computer technology or finance, representing 77 percent of the total, or 700,000. The rest were in fields that ranged from medical professionals and scientists to teachers and business administration analysts.

Computer technology jobs, including computer programmers and software developers, accounted for 647,653, or 71 percent of all visas requested. Accountants, auditors, and financial and management analysts accounted for 53,433, or about 6 percent of all visas requested.
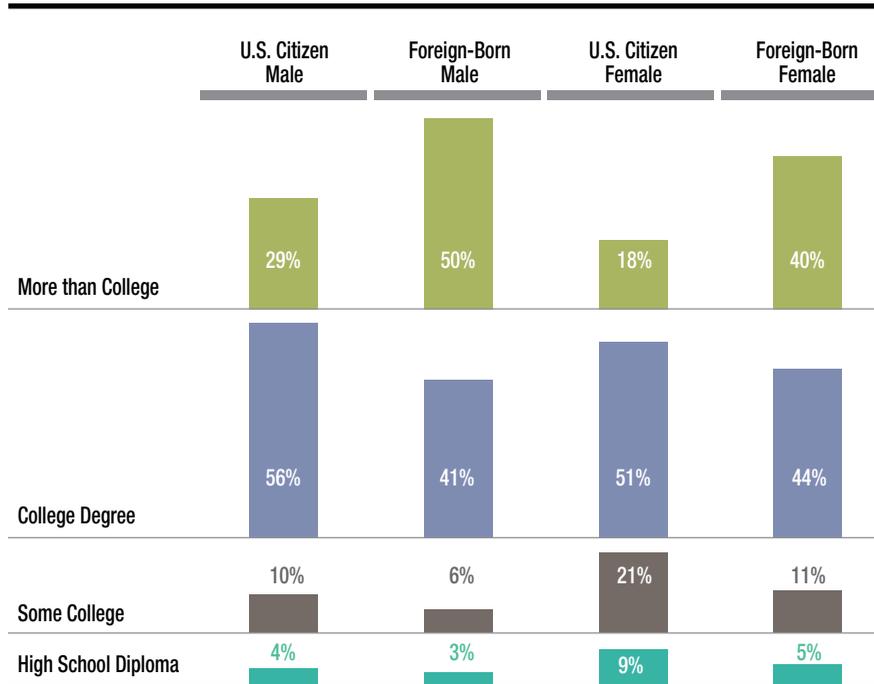
Data from the U.S. Census allow an analysis of the American and foreign-born workforce in these top 10 jobs. However, the information on H1B visa holders is incomplete. So it was necessary to use a proxy measure. To estimate the number and characteristics of high-skilled H1B workers, the analysis looks at workers who are both foreign-born and non-U.S. citizens employed in the selected occupations. While the proxy may overstate slightly the number of H1B visa holders in these top 10 occupations, it presents an accurate depiction of their demographic characteristics.

The results, based on 2010-2012 data (the most current Census data available), are shown in Table 2, left. They show that the workforce of HIB visa-demanded jobs is almost evenly split between computer technology, with 2.9 million, and finance, with 2.7 million.
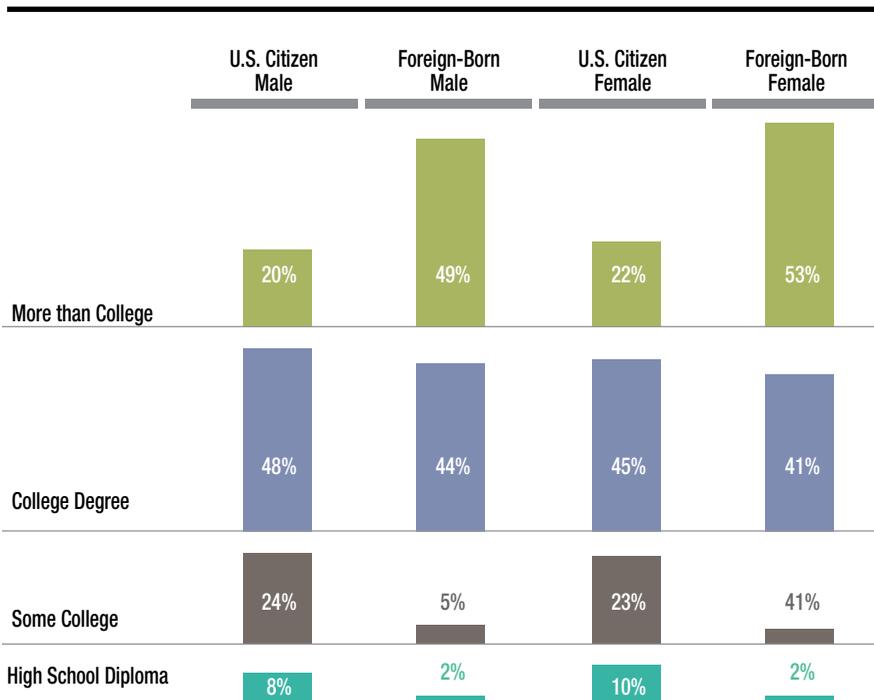
Despite their similar sizes, requests for H1B visas for computer technology jobs in 2012 were 12 times that of finance jobs. In fact, in one year, H1B visa requests from the computer technology industry equaled one-fifth of its entire high-skilled workforce.

Firms in the finance sector, in contrast, sought to fill a relatively small percentage of jobs, a mere 2 percent, with H1B visa holders.

CHART 1. EDUCATIONAL ATTAINMENT IN FINANCIAL OCCUPATIONS

	U.S. Citizen Male	Foreign-Born Male	U.S. Citizen Female	Foreign-Born Female
More than College	29%	50%	18%	40%
College Degree	56%	41%	51%	44%
Some College	10%	6%	21%	11%
High School Diploma	4%	3%	9%	5%

CHART 2. EDUCATIONAL ATTAINMENT IN TECNOLOGY OCCUPATIONS

	U.S. Citizen Male	Foreign-Born Male	U.S. Citizen Female	Foreign-Born Female
More than College	20%	49%	22%	53%
College Degree	48%	44%	45%	41%
Some College	24%	5%	23%	41%
High School Diploma	8%	2%	10%	2%

Source for Charts 1 and 2: AIER Analysis of Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. *Integrated Public Use Microdata Series: Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

Their skilled workforce needs were being more adequately filled by U.S. workers. As shown in Table 3 on page 2, the high-skilled finance jobs are roughly evenly split by gender, with 55 percent of jobs held by females. Computer technology jobs, on the other hand, are only 26 percent female.

COMPUTER TECHNOLOGY'S GENDER GAP

In both computer technology and finance, there is a high level of educational attainment. In finance, where there is no gender disparity in distribution, there are gender differences in education. In those occupations, as Chart 1 shows, 91 percent of H1B males working in finance have a college degree or higher. Among U.S. citizen males, 85 percent are highly educated. 84 percent of H1B females hold a college degree or higher, compared to 69 percent of U.S. citizen females.

In computer technology, there are less educational differences between men and women but a wide gender disparity. Though female's absolute numbers in the field are smaller than that of males, as Chart 2 shows, American males and females have about the same levels of higher education. 68 percent of American males have their college degrees or higher, compared to 67 percent of American females. H1B males and females tend to have high levels of educational attainment, but also are closely matched: 94 percent of H1B females have a college degree or higher, compared to 93 percent of H1B males.

Comparing across sectors, U.S. citizen males in finance have

higher shares of high educational attainment than their counterparts in computer technology. The proportion of U.S. citizen males in computer technology occupations with a college degree or higher is essentially equal to that of U.S. citizen females in finance with a college degree or higher.

THE PATH NOT TAKEN

These data show that while the number of high-skilled workers in computer technology and finance occupations in the U.S. is the same, the demand to import H1B workers is far greater in the computer technology industry. They also show that finance occupations are evenly divided between females and males, while computer technology jobs are dominated by males. Finally they reveal that the computer technology industry has wide gender disparity despite almost equal levels of educational attainment among the U.S. citizen workforce.

Given the wide gender disparity, it is not surprising that the computer technology industry has such a huge demand for H1B labor. But given the almost equal level of educational attainment by U.S. women compared to U.S. men, these findings also highlight the opportunity for industries to intensify their efforts at increasing the number of women seeking computer technology jobs. If business competitiveness is put at risk by a lack of high-skilled computer technology workers, it behooves the industry to find ways to identify and eliminate the barriers to women participating in their high-skilled jobs.

APPENDIX: METHODOLOGY NOTE

To analyze the demographic makeup of the top 10 demanded H1B visa occupations, AIER used a three-year aggregate sample of public use micro-data from the 2010-2012 American Community Survey from the U.S. Census.

The three-year dataset is a 3-in-100 random sample of the population. It contains all households and persons from the 1 percent samples for the years 2010, 2011, and 2012, totaling 3 percent of the population. By aggregating years, these micro-data allow us to look at representative and generalizable trends across high-skilled occupations.

To make a comparison of American workers and H1B visa holders, it was necessary to develop a proxy measurement for nativity and citizenship status. The American Community Survey does not ask respondents about legal status, only about nativity and citizenship. AIER first constructed a new variable: Those who answered that they were born in the United States and U.S. citizens, born abroad of U.S. citizen-parents, or were born abroad and had become naturalized citizens were recoded as "U.S. Citizen." Those who answered they were born outside the United States and were not U.S. citizens were recoded as "H1B."

This proxy for H1B holders, while certainly not exact, did result in comparable total shares of H1B workers in these fields. However, it is important to note that some of these foreign-born workers could be on a student visa, a visitor's visa, or could be unauthorized immigrants,

rather than H1B visa holders.

Occupation was the second main variable analyzed. The top 10 H1B occupations for the most part were all coded directly the same in the U.S. census. The only difference was that the American Community Survey collapses "Software Developers, Applications" and "Software Developers, Systems Software" into one occupation code. Thus, all reports of the top 10 occupations in the brief are really the top nine occupations as coded by the U.S. census.

Next, AIER combined occupation codes into two categories: financial occupations (totaling accountants and auditors, management analysts, and financial analysts); and computer occupations (totaling all remaining occupations). The report uses the terms "high-skilled occupations" and "H1B occupations" interchangeably.

Following this recoding of these two main independent variables, AIER conducted descriptive analyses of the following independent variables: sex, age, and educational attainment (recoded into less than a high school degree, high school degree, some college, college degree, and more than college). ■