

## SKILLED TEMPORARY SPECIALTY WORKERS IN THE UNITED STATES

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*Skilled temporary workers are today's hot controversy among U.S. immigration policymakers. Recent legislation increased the numbers of specialty H-1B workers permitted to work in the U.S., largely in response to employer demand in information technology. A simple majority are from India. The available research on all skilled foreign workers suggests that adverse impacts tend to be localized to certain labor market sectors.*

Companies compete in an increasingly global economy for high-skilled workers from countries around the world. A few observers, mostly other than employers, question the outcome of this competition for the best and the brightest. One report places the shortage of information technology (IT) workers in California's Silicon Valley at 90,000, the global shortage at 700,000, and decries that Australia's IT 'brain drain' abroad is at crisis proportions.<sup>1</sup> Researchers are asking tough questions about the disproportionate southward flow of skilled Canadians and its implications for the Canadian economy.<sup>2</sup> Perhaps these concerns are not widespread, but it is interesting that there is now debate over the loss of skilled labor from developed post-industrial nations.

In the United States, however, the debate remains whether there is too little or too much supply of foreign workers. Last year some claimed there was a shortage of 300,000 IT workers in the U.S. fueling legislation that increased the numbers of 'specialty H-1B' visas available. Consistent with high demand, the old limit on the number of H-1B visas was reached well before the 1998 fiscal year elapsed. On the other hand, sceptics claim that the shortage is manufactured by employers to justify the importation of 'cheaper' immigrants, that employers prefer young foreign workers with just-

the-right skills and drive who are often graduates of U.S. colleges, that H-1B workers displace older IT workers, or that employers refuse to take responsibility for training their workforce and so on. Suffice it to say that, even if the industry is 'struggling to fill vacancies', most experts do not believe that there is a clear shortage of IT workers.<sup>3</sup>

This article lays some groundwork for understanding how the issues of supply play out in the United States. It reviews the major categories of temporary visas and considers the specialty H-1B visa in particular. The basic requirements for the visa are discussed, as well as the changes that the new legislation puts into effect this year. Data on temporary visas, indeed on any aspect of U.S. admissions, are incomplete. What exists is presented with an eye toward tracking changes in numbers since the Immigration Act of 1990 went into effect in 1992. The most recent data available as of this writing are for 1996. The article finishes with a short review of the research literature on the labor-market impact of skilled immigrants. Unfortunately, there is very little research on just temporary workers, but the general composition of effects among highly skilled workers are known.

### TEMPORARY AND H-1B VISA DATA

The U.S. has an alphabet soup of temporary visas many of which authorize

limited stays to work and are referred to as 'non-immigrant' visas (NIV). Data on the entry of temporary migrants into the United States are collected by the Department of State (DOS) and the more familiar Immigration and Naturalization Service (INS). Both sources are for flow and no reliable data or estimates for the resident population of temporary workers are currently available.

Individuals apply for their visa through U.S. embassies and, after approval, the State Department issues the visa for U.S. admission. 'Visa issuances' are for individuals, but a few individuals who are issued a visa fail to enter the United States. The issuances are an undercount as well in that they do not include persons who receive a new and different non-immigrant visa within U.S. borders. Nor do issuances include workers who extend their visa stay while in the United States. Nevertheless, these data from the DOS are the closest count of individuals available and are nearly complete.

The temporary or NIV admission data collected by the INS do not count individuals, but rather they count the multiple entries made by individuals over the course of the year. Each time the INS admits a tourist, businessperson, worker, etc., they are counted in the admissions data, which is consistent with the INS's role to inspect each entrant. The INS temporary admission figures are frequently seen in the literature, but they are misleading and it is preferable to avoid using them.

Table 1 shows the major categories of temporary visas including visas that permit directly or indirectly authorization to work.<sup>4</sup> Clearly, the greatest number of temporary visas are issued to visitors (B), a category that includes tourists and business persons. There were some five

million individual visitor visas issued in fiscal year 1996 and some 23 million admissions were counted. The balance of the student and working visas encompass far fewer individuals. There were 58 thousand visas issued to speciality H-1B workers in 1996 and, with an average of 2.5 trips per year, thus 144 thousand admissions. The specialty workers are about half of the major working visa class of 'temporary workers and trainees'.

On a final note, Table 1 shows TN professional workers who are similar to the H-1B worker but there are no visa data for them. The TN refers to 'Trade NAFTA' and was created by the North American Free Trade Agreement for citizens of Canada or Mexico. The number of TNs is in addition to other working visas issued to Canada or Mexico. TN professionals from Canada are exempt from visa requirements, whereas Mexicans must first obtain a visa with requirements that are similar to the H-1B. The applicant must have a baccalaureate degree or appropriate professional credentials and stay for up to one year with no limit on the number of extensions.

#### **THE SPECIALITY H-1B WORKING VISA**

Speciality H-1B workers are professionals and highly skilled individuals. The H-1B visa generally requires a baccalaureate or higher degree. Its major features have been and remain a six-year maximum duration of stay, that is, a three-year visa renewable for another three years; a labor condition application (LCA) or the requirement that employers attest that they comply with conditions intended to protect U.S. workers from undue competition with speciality workers; and a numerical limit of 65,000 temporary migrants to be admitted into the United

States each year (see exception below).

The employer who wishes to hire a H-1B must first submit and have a LCA approved by the U.S. Department of Labor (DOL) in which they attest that they will pay the actual or prevailing wage, not adversely affect the working conditions of U.S. workers, that they will state the job description and that there has been no strike or lock out. In principle, LCAs are faster to process than the more carefully verified certification that the jobs of certain classes of employment-based permanent residents must clear. There is a legislated time period on the DOL's review of employers' applications.

Primarily as the result of lobbying by the information technology industry, in the closing months of last year the U.S.

Congress passed the 'American Competitiveness and Work Force Improvement Act of 1998'. The new legislation, beginning in October of 1998, provides a temporary increase in the number of available H-1B visas from 65,000 per year to 115,000 per year in 1999 and 2000, and 107,500 in 2001. Unless new levels are legislated, the numerical limit is to return to 65,000 in the year 2002.

As a trade-off to those who opposed increased numerical limits, the Bill includes new worker protections for so-called 'H-1B dependent' firms, e.g., those most likely to unfairly exploit the specialty worker at the expense of U.S. workers. Dependent firms are defined as those with a certain percentage of their workforce who are H-1Bs. For the dependent firm, there are two important extra worker

**Table 1: Temporary non-immigrant visa issuances and admissions**

	Visa Issuances (Individuals)		Admissions (Entries)	
	1992	1996	1992	1996
All classes	5,368,437	6,237,870	20,793,847	24,842,503
Foreign officials (A)	62,674	78,078	102,645	118,157
Temporary visitors (B)	4,272,120	4,947,899	19,238,240	22,880,270
Transit aliens (C)	155,040	186,556	345,610	325,538
Treaty traders & investors (E)	31,805	29,909	152,416	138,568
Students (F1, M1)	223,309	247,432	241,093	426,903
Students' spouses/children (F2, M2)	22,325	21,518	33,431	32,485
International representative (G)	25,162	30,258	69,985	79,528
Temporary workers & trainees	79,573	119,334	163,262	227,440
Registered Nurses (H-1A)	7,377	1,745	7,176	2,046
Specialty occupations (H-1B)	44,290	58,327	110,223	144,458
Performing services n.a. (H2)	18,997	23,204	34,442	23,980
Agricultural workers (H-2A)	6,445	11,004	16,390	9,635
Unskilled workers (H-2B)	12,552	12,200	18,052	14,345
Industrial Trainees (H3)	2,069	1,877	3,352	2,986
Extraordinary ability (O1, O2)	674	4,359	714	9,289
Athletes & entertainers (P1,2,3)	4,319	23,885	4,769	33,633
Exchange & religious (Q1, R1)	1,847	5,946	2,586	11,048
Spouses (H4, O3, P4, R2)	25,194	38,496	40,009	53,572
Exchange visitors (J1)	145,020	171,164	189,940	215,475
Spouses/children of exchange (J2)	32,470	33,068	42,031	41,250
Intracompany transferees (L1)	17,345	32,098	75,347	140,457
Spouses/children of transferees (L2)	21,358	37,617	45,501	73,305
Professionals, North American Free Trade Agreement (TC/TN)	n.a.	n.a.	12,531	26,987

Sources: See reference number 4.

protections required. Employers must attest that no U.S. workers are laid off for the three months before and the three months after hiring of the H-1B. And employers must attest that they have made significant steps to recruit U.S. workers. These protections will come off in three years when the number falls back to 65,000 unless a new cap is voted on. However, some critics believe that clever lawyers will circumvent employers' obligations to make a special attestation because exemptions to the definition may mean that very few firms may be classified as dependent.

The new law also has a requirement that H-1B workers receive the same fringe benefits as U.S. workers. The Act requires an additional \$500 fee for petitions filed and provides for new investigative procedures and new penalties for violations. The bulk of the fee will go toward training of displaced workers and scholarships for low-income students. Employers such as universities and federally-funded research institutes are exempt from the fee. Other provisions require reporting by various U.S. agencies on the H-1Bs' countries of origin, occupations, educational levels, and compensa-

**Table 2: Speciality H working visa issuances and admissions (for all H and H-1B visas) by select countries of origin**

Region and selected countries	All State H Issuances		INS Admissions, 1996	
	1992	1996	All H	H-1B
Asia	44,155	58,675	62,412	56,981
China	3,660	6,248	4,914	4,377
Mainland	2,708	4,645	n.a.	n.a.
Taiwan	952	1,603	n.a.	n.a.
India	8,863	30,444	29,393	29,239
Israel	1,443	1,367	2,045	2,000
Japan	6,710	5,230	9,154	7,401
Korea, South	3,322	1,699	2,278	1,934
Pakistan	627	1,548	1,768	1,760
Philippines	16,633	8,407		
Europe	27,867	28,249	55,083	52,054
France	2,475	2,179	6,294	6,076
Germany	1,969	2,293	6,509	6,117
Britain & Northern Ireland	8,867	8,822	18,824	18,221
Netherlands	962	1,166	2,895	2,694
Poland	1,513	1,172	761	696
Russia	1,821	2,766	2,307	2,190
North America	15,634	22,561	31,436	12,525
Canada	173	150	6,154	4,192
Jamaica	1,062	1,639	1,802	415
Mexico	11,818	19,080	19,859	5,273
Africa	2,359	3,360	3,713	3,577
South America	4,976	5,850	14,515	13,602
Brazil	1,450	1,468	3,418	3,365
Venezuela	950	1,531	3,892	3,423
Oceania	2,360	2,436	4,515	4,023
Australia	1,531	1,909	3,513	3,203
New Zealand	809	519	965	785

Sources: See reference number 4.  
Notes: N.A. means not available.

tion. A report by the National Science Foundation is to address the impact of H-1Bs on the information technology labor market, including purported discrimination against older workers which may be abetted by the supply of H-1Bs.

While employers welcomed the increase in the H-1B cap, even that may not be sufficient this year given the backlog carried over from fiscal year 1998. Already by the end of December 1998 59,108 of the 115,000 H-1B visas avail-

**Table 3: Specialty H-1B worker labor condition attestations and average yearly salary and number of petitions**

Occupational Category	Average Wage			Petitions		
	1992	1997	1997/1992 <sup>a</sup>	1992	1997	1997/1992 <sup>a</sup>
Architecture, Engineering and Surveying	\$42,188	\$49,643	1.18	4,520	18,279	4.04
Mathematics and Physical Sciences	\$40,217	\$46,189	1.15	2,093	3,178	1.52
Computer-related Occupations	\$39,750	\$49,178	1.24	5,732	63,468	11.07
Life Sciences	\$33,673	\$35,678	1.06	2,120	3,482	1.64
Social Sciences	\$42,449	\$42,826	1.01	808	3,153	3.9
Medicine and Health	\$43,891	\$55,903	1.27	4,114	12,569	3.06
Education	\$33,945	\$36,302	1.07	4,878	8,226	1.69
Museum, Library, and Archival Sciences	\$29,309	\$36,562	1.25	98	255	2.6
Law and Jurisprudence	\$64,605	\$67,499	1.04	342	818	2.39
Religion and Theology	\$25,980	\$32,090	1.24	50	77	1.54
Writing	\$37,212	\$37,613	1.01	235	1,092	4.65
Art	\$35,479	\$39,535	1.11	336	1,876	5.58
Entertainment and Recreation	\$37,953	\$39,637	1.04	135	348	2.58
Administrative Occupations	\$38,514	\$42,508	1.1	2,132	11,225	5.27
Managers and Officials	\$62,706	\$59,072	0.94	1,919	6,613	3.45
Professional, Technical, and Managerial	\$49,910	\$52,563	1.05	895	3,741	4.18
Fashion Models	\$134,583	\$115,000	0.85	4	11	2.75
Total	\$41,244	\$48,390	1.17	30,411	138,411	4.55

<sup>a</sup> This is the 1997 figure divided by the 1992 figure.

Source: Special tabulations by the author using Department of Labor, Administrative Data 1992, 1997

Note: Data are for full-time work, yearly salary reported, and approved cases in each database year.

able for Fiscal Year 1999 have been used C 19,431 of the visas were issued to migrants whose applications were held over from the last fiscal year and 39,677 were new cases. The forecast is that the remaining 55,892 visas could be used up by June 1999. It would seem unlikely that employers will lobby for, or would be able to get through Congress, a renewed increase in the cap this year.

**H-1Bs and countries of origins**

There are some incongruities between the Department of State and INS data sources for the origins of H-1Bs. The State Department data are for country of nationality and aggregate all H classes. However, the H-1B principal visa alone is about half of all H visas and, together with their dependents, these visa holders comprise over three quarters of all H visas. Table 2 shows the issuances and admissions by countries selected either because they had at least 1,000 visas issued in 1996, or because they are of

independent interest.

The total number of all H class visas issued in 1992 was about 97,000 and these grow to 121,000 by 1996. It is notable that most specialty workers come from Asia followed by Europe and North America. Very few specialty workers come from either South America, Africa, or Oceania. The large representation of Mexican H visa issuances has to do with the fact that most of these individuals are H-2B agricultural workers. Where the admission figures are less than the visa issuances, such as in the case of China, it is possible that persons for whom visas are issued are not using them for admission to the United States.

India shows the greatest growth of H visas of all countries, while the Philippines shows one of the more dramatic declines. It is quite possible that Indian specialty workers are experiencing demand unique to the information technology sector, while the Philippines, in part, is showing the effects of the nursing

H-1A visa being phased out. Filipino nurses had been a mainstay of that program. Also of interest, Australia sends an increasing number of H workers to the U.S., who are likely H-1Bs, but they make up only 3.3 percent or 1,909 of the H visas issued in 1996. New Zealand saw a decrease in H issuances for unknown reasons.

#### **H-1Bs and occupations and earnings**

Data are not collected for the occupations of temporary workers, although the new H-1B legislation should create such data for H-1Bs in the near future. For now, Table 3 shows that something can be learned from DOL data on employer applications for hiring-approval. The DOL data count applications for approval and employers file several times the number of visas eventually issued to migrants to work in the United States. However, they are the only data available.

Notice that there is substantial growth in the average wage of Computer-related occupations (24 per cent) from 1992 to 1997, as might be expected for an occupation with growing employer demand and spot-shortages of qualified U.S. workers. More interesting is the 11 fold growth in applications for H-1B workers in computer related occupations. This is far higher than for any other field. Although the number of applications has no direct relationship to individual workers, it does reflect increased employer search activity or the demand for such workers. The movement of the wage and applications data loosely mirrors the increase in visa issuances in H-1Bs. The average \$49,000 rate for computer people in 1997 is consistent with entry level wages in the field at the time.

#### **H-1B 'adjustment' to permanency**

Temporary non-immigrants are permitted to 'adjust' their status in-country to that of legal permanent resident. There are no data that tell us what proportion of temporary non-immigrants make the transition from temporary NIV to legal permanent resident (LPR) status. And the share adjusting is necessarily limited by caps on the number of permanent visas issued. The total number of H-1B adjusters to permanent status in 1996 had not increased notably since the Immigration Act of 1990 went into effect in 1992, staying at just around 35,000. However, the numbers have more than quadrupled since the 1980s demonstrating that increased demand for H-1B workers ultimately translates into increasing numbers adjusting to permanent status. That is certain to occur as we enter into the next century, but it is not possible yet to forecast what the number of conversions will be.

Indirect estimates suggest that the proportion of adjusters as of fiscal year 1994 are substantial. Nearly four-tenths of temporary speciality workers (H) may adjust into some LPR immigrant category.<sup>5</sup> Other temporary visa categories have estimated adjustment rates that are less than half that of the speciality category. The student F visa may have direct adjustment rates of about 17 per cent. Of course, these figures do not tell us about the longer chains that exist such as the 'change in status' from one temporary visa to another, like F student to H-1B speciality worker, followed by the adjustment into permanent status. The primary path for students who adjust is through the marriage admission class, but H-1B follows next in order. One crude lower-bound estimate suggests that at least one-fifth of the foreign students moved both from F directly, *and* indirectly through H-1B, to achieve any permanent status in

FY 1996.<sup>6</sup>

### **FOREIGN SKILLED WORKERS AND THE U.S. LABOR MARKET**

Much of the controversy over temporary workers has to do with their impact on the resident U.S. labor force. Unfortunately, there is a dearth of rigorous research on just temporary workers. The literature discussed below often combines the effects of temporary and permanent foreign-born workers. Nevertheless, to the degree that the temporary labor force is similar to the permanent, it yields some insights into what the anticipated impacts of temporary workers may be. Employers tell us that temporary workers are needed and create jobs in the private sector. Advocates for labor find reasons for concern that some U.S. workers are adversely affected.

#### **Foreign students and higher education**

Foreign-born scientists and engineers in research and development, those occupations likely to have temporary or adjusting workers, are a significant part of the U.S. labor force. They make up a greater share of doctorates than masters, although the numbers have increased at all levels of education. Most foreign-born graduates in the U.S. received their advanced degree from a U.S. institution. Consider the available data for the labor force in research and development by degree received in 1993. At that time, 28.3 per cent of all foreign-born graduates were employed in universities and colleges where they made up 20.7 per cent of the workforce employed in that sector. While 62.7 per cent of all foreign born were employed in private industry, they made up a lesser 15.5 per cent of workers in that sector.

The U.S. is experiencing a restructuring of academic work with an increasing share of non-tenured and part-time fac-

ulty, and a large pool of postdoctoral workers who spend more years in that status.<sup>7</sup> The number of post-doctoral appointments increased 210 per cent from 16,829 in 1975 to 35,379 in 1995; and the foreign-born have received half of all postdoctoral appointments since 1990. Of course, with solid access to postgraduate employment, many foreign students go on to temporary work authorization and, ultimately, permanent employment. Nearly half of the temporary foreign students who received their Ph.D.s in 1990-91 were still working in the United States five years later in 1995.<sup>8</sup>

Most research does not find obvious adverse effects of foreign temporary or permanent residents. Foreign students have faster and higher Ph.D. completion rates, indicating that they certainly do not lower standards in U.S. graduate institutions.<sup>9</sup> Other observers are concerned by the remarkable growth in the post-Ph.D.-completion market and the high concentration of the foreign born among Ph.D. workers.<sup>10</sup> They assert that an expanding post-doctoral market, with large shares of foreign students and workers willing to take these typically underpaid post-doctoral positions, may create conditions that discourage natives. Competition may be especially steep with minorities. More than 75 per cent of foreign doctoral recipients in 1996 reported that their U.S. university was their primary source of funding.<sup>11</sup> But the evidence suggests that natives and minorities in particular are favored over immigrants in competition for university funds.<sup>12</sup> While there are many suggestive findings that point in the direction of competition, there is to date no conclusive research to support broad assertions.

### **Non-academic labor markets**

Most of the research on the labor market impact of foreign-born professionals has focussed on scientists and engineers rather than the recent dramatic increase in the numbers entering as H-1Bs in the computing fields. However, it is likely that outcomes for the latter are similar to those experienced with scientists and engineers. The growth in the numbers of foreign-born scientists, engineers and mathematicians in the private sector has been substantial and some observers argue that minorities might have been able to fill the jobs that the foreigners took.<sup>13</sup> They calculate that, if minorities were educated and took these types of jobs at the same rate as white males, their numbers would nearly supply the labor force counted in the 1990 U.S. Census. Only a very few foreign-born would be needed to meet demand, if minorities and women were attracted to science and engineering employment. In fact, across all professions there is a much greater concentration of Asian and White professionals than of Black or Hispanic.

It is asserted that the striking under representation of Blacks and Hispanics may be due to the supply of foreign-born workers who disrupt incentives that could stimulate the latent supply of minority professionals. It might be that foreign-born professionals are willing to work longer hours for less pay. However, there is no strong evidence for this typically cited displacement mechanism. Asian and White professionals, especially the foreign born, tend to earn more on average than Black or Hispanic professionals.<sup>14</sup> Rising unemployment, especially among U.S.-born workers, might be another manifestation of adverse competition. But skilled U.S. workers in 1994 had a 2.2 per cent unemployment rate as compared to 3.9 per cent for the skilled foreign born.

Even if immigrants do not work for lower wages, a 'glut of any group in the marketplace' may lower wages because even equally qualified unemployed U.S.-born workers would be willing to work for less. Note that recently arrived Asian immigrants earn 18 per cent less than Whites, after controlling for human capital characteristics, training, speciality, and government employment. This wage difference takes six to eleven years for the skilled foreign-born worker to overcome.<sup>15</sup> A study of M.S. graduates of the University of California at Los Angeles engineering school found that the initial earnings disadvantage of immigrants, relative to natives in their first job, disappeared with subsequent employment. Nor do immigrant engineers experience a glass ceiling on their upward mobility.<sup>16</sup> If there is an adverse effect of a 'glut' it appears to be short-lived. Given that these high-skilled occupations have unemployment rates below three per cent and earnings are well above average, most observers express little concern. If there is an effect of immigrants on natives, especially minorities, the effect must be a subtle one for it does not appear immediately in the data.

### **CONCLUSION**

The research reviewed above draws on secondary data sources and tends to support the observation that there are no clear-cut adverse impacts of skilled foreign workers. However, field research suggests that there are spot labor markets that deserve closer attention. Native workers in San Francisco and Houston do not appear to compete with foreign temporary workers in the academic labor market at the level of instructor or professor in the sciences, possibly because of the highly selective hiring process at that level.<sup>17</sup> Yet the field research did

find instances of competition among post-doctoral students. In the private sector, the field research also uncovered clear instances of the abuse of the temporary system in so-called job shops. These are out-contracting outfits, in this instance in computer programming, that hire large numbers of temporary foreign workers whom they underpay in order to underbid competitors.

The new legislation on speciality H-1B workers attempts to identify job shops, or 'H-1B dependent' employers, and puts additional requirements on them. It is a move in the right direction insofar as policymakers are attempting to direct specific policy instruments at troublesome employers and not club the entire employer community. But it is not clear that this well intentioned provision will end up applying to a significant number of employers including those to whom it should apply. How well it works will not be known for a couple of years yet while the new regulations go into effect. In the meantime, more definitive answers for those who continue to express concerns, either for employers who wish easier access, or labor activists who wish to closely regulate admissions, will require experience with the new legislation and more refined research directed toward skilled temporary labor.

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