Guest Worker Programs and the STEM Workforce

The science, technology, engineering, and mathematics (STEM) workforce is central in the debate over nonimmigrant visas. Skilled immigrants and guest workers are an important supplement to our science and engineering workforce when a labor shortage exists; however, evidence shows the current system allows employers to substitute guest workers for U.S. workers, with depressive effects on wages in those occupations. STEM occupation is defined for the purpose of this fact sheet to include all occupations in the computer and mathematical, architecture and engineering, and life, physical, and social science occupation groups as defined by the U.S. Bureau of Labor Statistics.

This fact sheet provides an overview of the H-1B, L-1, and other temporary work visas and addresses misconceptions regarding the supply and demand of U.S. workers in STEM fields. The challenges facing U.S. STEM workers highlight the importance of reforming the U.S. high skilled visa programs for temporary workers.

Guest Worker Programs Relevant to STEM Occupations

- **H-1B visa:** The H-1B visa is a nonimmigrant visa issued to employers who will employ guest workers temporarily in a specialty occupation or field. The H-1B visa is issued for a period of up to three years but may be renewed for up to six years. The number of H-1B visas has some limits, although the cap has fluctuated throughout the program’s existence.¹

- **L visa:** L visas are often discussed alongside the H-1B visa. There are two types of L-1 visas. The L-1A visa is for persons employed at the managerial or executive level and is issued for a period of up to three years and renewable for a maximum of seven years. The L-1B visa is for intra-company transferees who have specialized knowledge in their field; it is issued for a period of up to three years and is renewable for up to five years. L-2 visas are issued to spouses and children of L-1 visa beneficiaries, allowing them to reside and work in the U.S. for the duration of the L-1 visa.

- **Optional Practical Training (OPT):** The OPT program allows students on an F or M visa to work for 12 months after graduation and students with a degree in a STEM field to work another 17 months for a total of 29 months after graduation. OPT does not have a wage requirement and employers are not required to pay Medicare or Social Security taxes for OPT beneficiaries.² The OPT program does not require that employers test the labor market before hiring an OPT beneficiary.

- **B-1 in Lieu of H-1B:** The B-1 visa in lieu of H-1B allows employers to bring in workers even when the cap for H-1B workers has been reached. The B-1 in lieu of H-1B beneficiary must have at least a bachelor’s degree, perform work or receive training of an H-1B caliber (specialty work), be paid by their foreign employer (cannot be a U.S. source), and the task...
they are coming to America to do can be accomplished in a short amount of time.\(^3\) There is no information available on how many of these visas are issued each year, their duration of stay, the type of work involved, or the requesting/sponsoring employer.

- **Other:** Several other non-immigrant visas make it possible to work in STEM occupations in the U.S., including the E-3 Australian Specialty Occupation Professional; TN for NAFTA Professionals; and the O-1 visa for persons with extraordinary ability in science, art, education, business, or athletics.

### STEM and Guest Worker Visa Allotments: Recent Data

In total, about 500,000 new guest worker visas are granted each year for workers in skilled occupations, primarily STEM. The majority of these guest workers will never become U.S. citizens. They are more likely to work precariously in the U.S. for several years.

- The U.S. Department of State issued 149,621 L visas in fiscal year 2014. Among those, 71,513 were L-1 visas and 78,108 were L-2 visas. L visas were issued in nearly 200 countries; however, 30 percent of L-1 visas went to guest workers born in India.\(^4\)

- The U.S. Citizenship and Immigration Service (USCIS) approved 315,857 H-1B petitions in FY 2014, a 10 percent increase over FY 2013. Petitions for approved initial employment numbered 124,326, a three percent decline from FY 2013.\(^5\)

- Of the 315,857 H-1B visas approved in FY 2014, 203,425 were for workers in computer-related occupations; 29,103 in architecture, engineering, and surveying occupations; 15,358 in medicine and health; 14,402 in college and university education; and 7,869 in accounting, auditing, and related occupations.\(^6\)

#### Number of H-1B Visas Granted Between FY 2006 and FY 2014\(^i\)

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<tbody>
<tr>
<td>All Occupations</td>
<td>270,981</td>
<td>281,444</td>
<td>276,252</td>
<td>214,270</td>
<td>192,990</td>
<td>269,653</td>
<td>262,569</td>
<td>284,815</td>
<td>313,930</td>
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<td>Computer-Related Occupations</td>
<td>130,556</td>
<td>139,628</td>
<td>137,010</td>
<td>88,960</td>
<td>90,802</td>
<td>134,873</td>
<td>154,869</td>
<td>171,613</td>
<td>203,425</td>
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- In 2013, over 120,000 students were approved for OPT. In 2011, the last year with available data, the USCIS disclosed that 13,179 students utilized the STEM extension.\(^8\)

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\(^{1}\) Numbers reflect both renewed and newly granted H-1B visas. The total number of H-1B visa beneficiaries working in the U.S. at any given time is unknown. Furthermore, it is important to remember that these numbers do not account for those who have remained in the labor market after their visa expired. Estimates indicate that 40 to 45 percent of undocumented immigration can be attributed to immigrants who have overstayed their legally obtained visas. See Ray Marshall, *Immigration for Shared Prosperity—A Framework for Comprehensive Reform* (Washington, DC: EPI, 2009) for a further explanation of methodological problems.
Data is not available for visas granted pursuant to the B-1 in lieu of H-1B and thus, it is unknown how many are issued each year. In FY 2014, there were 4,492 Australian specialty occupation professional visas granted. Also in 2014, TN NAFTA professionals received 11,207 work visas. Finally, there were 12,706 visas granted in the O-1 visa category, but not all of those visas went to STEM professionals.\(^9\)

**The Limitations of Cap Limitations**

There is no annual cap on OPT, L-1, or L-2 visas. While the annual H-1B guest worker cap is set by statute at 65,000, several exemptions to the cap cause the number of H-1B visa recipients to far exceed 65,000 each year.

- The U.S. permits institutions of higher education, their affiliated non-profit entities, non-profit research organizations, and government research organizations unlimited H-1B visas. These visas are in addition to those subject to the 65,000 visa cap.\(^{10}\)
- Beginning in 2004, another exemption allowed an additional 20,000 H-1B visas for U.S. educated guest workers with advanced degrees (at least a master’s degree).\(^{11}\)
- The H-1B visa is renewable for up to six years and USCIS renewed some 192,000 visas in FY 2014.\(^{12}\) The H-1B can then be renewed indefinitely if a worker is sponsored by the employer for U.S. citizenship. Waiting periods for U.S. citizenship can be up to 15 years for professionals from India and China.

**Oversight of Guest Worker Programs**

Oversight of guest worker programs is virtually non-existent since there are so few laws that regulate the use of guest worker visas. No meaningful protections for U.S. workers exist—employers are not required to test the U.S. labor market or offer jobs to U.S. workers before hiring a guest worker. H-1B visa employers are required to pay the prevailing wage, but this just means that most guest workers are paid entry-level wages even if the H-1B beneficiary has advanced education and training. The only wage protections for non-H-1B guest workers is the U.S. minimum wage.

- In late 2013, Electronics for Imaging, was fined by the U.S. Department of Labor and ordered to pay back wages to guest workers who were paid just $1.21 per hour to install computer systems.\(^{13}\) Electronics for Imaging was only required to pay its L-1 visa workers the U.S. minimum wage.
- An automotive engineer, Suraj Kamath, at Bosch Engineering in Santa Barbara, CA was working in the United States for a little over four years on an L-1 visa. Mr. Kamath believed Bosch employed as many as 160 high skilled workers in the United States and paid them between $600 and $2,100 per month (as well as a standard of living allowance and transportation reimbursement). However, Mr. Kamath knew this compensation was “far lower than salaries typically paid to highly skilled workers in the U.S.” Bosch required Mr. Kamath to return to India when he refused to give Bosch the federal and state tax refunds he had lawfully received in the three previous years.\(^{14}\) Mr. Kamath had no protection from his employer’s practices in the U.S.
- In 2006, the Government Accountability Office noted: “[the Department of] Labor’s oversight of the H-1B program is…limited by law to identifying omissions and obvious
inaccuracies, but we found that it does not consistently identify all obvious inaccuracies….”

- According to former U.S. Secretary of Labor Ray Marshall, the current system of employment-based immigration, is “rigid, cumbersome, and inefficient; [does] too little to protect the wages and working conditions of workers (foreign or domestic); [does] not respond very well to employers’ needs; and give[s] almost no attention to adapting the number and characteristics of foreign workers to domestic labor shortages.”

- In 2015 and 2014, numerous companies announced layoffs in their IT departments, notable companies include the Walt Disney Company, Southern California Edison, and Fossil. The layoffs were part of an offshore outsourcing plan, which will result in about 1,000 people losing their jobs at just these three companies. Some of the laid off IT professionals will be replaced by temporary foreign workers in the U.S. while the remaining work will be moved to India. The use of H-1B visas beneficiaries to replace U.S. workers at wages that are about 30 percent lower is legal under U.S. law.

### U.S. Supply and Demand for STEM Workers

STEM professionals make up a very small portion of the U.S. workforce. Out of a total workforce of about 150 million in 2015, STEM professionals were only five percent of the U.S. workforce (7.6 million workers). Over 10 percent of the U.S. STEM workforce were not U.S. citizens (nearly 800,000 workers). A few occupations had concentrations of guest workers that were much higher than 10 percent. For example, about 20 percent of software developers were not U.S. citizens and 31 percent of professionals in the category of “medical scientists and life scientists, all other” were not U.S. citizens. Many experts have argued that high concentrations of guest workers has affected job opportunities and wages for STEM professionals.

If there was a shortage of STEM professionals, then we would expect to see an increase in wages. However, labor market indicators, including the supply of relevant workers and changes in wages, do not demonstrate a shortage of STEM workers.

### Stagnant Wages in STEM Occupations

Wages in most occupations have not kept pace with inflation, resulting in most workers earning the same amount today as they did 10 years ago, or even less. Median hourly wages for all workers declined 1.4 percent from 2004 to 2014. However, we would not expect to see slow wage growth in occupations where there is strong demand for workers. For example, healthcare practitioner and technical occupations grew by 24 percent from 2004 to 2014 and consequently, median hourly wages adjusted for inflation over that period increased by 4.3 percent. However, computer and mathematical employment grew by 32 percent from 2004 to 2014, yet real median wages only grew 1.2 percent. Stagnant wages are evidence of an ample labor supply.

- A 2015 report by researchers from the University of Notre Dame, UC Berkeley, and the U.S. Department of Treasury found that H-1B visa beneficiaries “crowd out employment of other workers” and found “evidence that additional H-1Bs lead to lower average employee wages while raising firm profits.”

- The savings realized by companies that layoff their domestic IT staff and contract the work out to companies utilizing H-1B visas is considerable. In a 2014 example, Southern
California Edison reportedly paid its U.S. IT professionals about $110,500 in annual base salaries. Those IT professionals were laid off and their H-1B replacements were paid between $66,000 and $71,000 per year. Before the IT professionals were laid off they were needed to train their lesser-skilled replacements.

- A Congressionally-mandated study released by the National Research Council—the principal operating arm of the National Academy of Sciences and the National Academy of Engineering—found “the current size of the H-1B workforce relative to the overall number of IT professionals is large enough to keep wages from rising as fast as might be expected in a tight labor market.” Further, it also found, “no analytical basis on which to set the proper level of H-1B visas,” and concluded that “decisions to reduce or increase the cap on such visas are fundamentally political.”

Supply—Incumbent Workers

Claims of STEM worker shortages originate from employers who seek to boost the supply of workers in an effort to keep wages down. Employers have taken to funding studies to back up their claims. Not surprisingly, industry funded studies always conclude that there is a shortage of labor and studies that do not have industry funding tend to find an ample supply of labor.

- An April 2013 report found that “in computer and information science and in engineering, U.S. colleges graduate 50 percent more students than are hired into those fields each year” suggesting an imbalance in supply and demand.

- In March 2015 there were 7.6 million professionals in STEM occupations (computer and mathematical, architects and engineers, and life and physical scientists). Among the 7.6 million STEM professionals, 47 percent had a bachelor’s degree, 23 percent had a master’s degree, and seven percent had a professional degree or Ph.D. The remaining 23 percent had an associate’s degree or less. Not all of these STEM professionals hold a STEM degree or even have a degree.

- Millions of professionals with degrees in STEM were not working in STEM. In 2013, there were 11.5 million U.S. citizens ages 65 and under who had a bachelor’s degree in a STEM field. Thus, there are potentially eight million STEM bachelor’s degree holders working outside of STEM. Millions more STEM professionals with master’s degrees are also likely working outside of the STEM workforce. Thus, the U.S. is actually producing an ample supply of STEM workers.

- Workers may seek employment outside of their field of degree for a myriad of reasons. Some may be unable to find a job, the working conditions may not be compatible, or wages may not have been sufficient for the work being performed. In many STEM occupations, wages over the last 10 years have not kept pace with inflation. This in spite of claims of shortages of skilled STEM workers.

Supply—the Education Pipeline

In addition to the current supply of STEM professionals, there is a steady stream of new graduates entering the STEM workforce each year. It is important to note, however, that STEM occupations, especially computer occupations draw talent from a variety of degree fields.
• Nearly 2.7 million professionals in computer and mathematical occupations had a bachelor’s in 2013. Among those, just 54 percent had a bachelor’s degree in a computer, mathematics, or engineering field. The remaining 46 percent had a degree in a wide-array of other subjects, including communications, English literature, biology, psychology, physics, economics, and business management and administration.

• In March 2015, among computer professionals 28 percent reported their highest grade completed was an associate’s degree or less; 48 percent reported their highest degree earned was a bachelor’s degree. Among engineers, 20 percent had an associate’s degree or less, 52 percent had a bachelor’s degree, and 24 percent had a master’s degree.²⁶

• In 2012, over 550,000 bachelor’s degrees and over 120,000 master’s degrees were awarded to U.S. citizens and permanent residents in science and engineering fields. U.S. citizens and permanent residents were awarded over 22,000 science and engineering doctoral degrees in 2012.²⁷

• In 2012, over 80,000 associate’s degrees were conferred in science and engineering related fields.²⁸

Demand—Labor Market Conditions

From 2004 through 2014, an average of 100,000 new STEM jobs were created each year. Much of that growth was in computer-related occupations.

• Computer and mathematical occupations grew by 32 percent from 2004 to 2014 (adding 918,880 jobs). Architecture and engineering employment increased by just two percent (adding 45,250 jobs) from 2004 to 2014, and life, physical, and social science occupations grew 22 percent (adding 202,730 jobs).²⁹

• In April 2015, nearly 210,000 professionals in computer and mathematical science, architecture and engineering, and life, physical, and social science occupations were unemployed. Life, physical, and social science occupations had the highest unemployment rate, 3.2 percent, followed by architecture and engineering, 2.8 percent. Computer and mathematical science had the lowest unemployment rate, 2 percent.³⁰

• Not all graduates are able to find jobs in STEM occupations. In 2013, there were nearly three million people with a bachelor’s degree in a STEM subject (computer, math, engineering, and hard sciences) working in non-professional occupation fields, including food service, building and grounds cleaning and maintenance, office and administrative support, and production occupations.³¹

Conclusion

Flat wages, an abundant supply of new talent, and degreed workers on the bench belie the claims of a labor shortage. Skilled guest workers are an important component of a thriving and successful economy. However, to limit employer abuses and preserve opportunities for domestic labor, there must be limits placed on employers hiring guest workers.

The U.S. should adopt policies that protect the investment our country has made in its skilled workforce and ensure that opportunities are available for the young adults we have urged
to enter STEM professions. The DPE recommends the following six reforms be made to our guest worker visa programs:

1. Evidence of a labor shortage before employers are authorized to seek guest workers;
2. Requiring all employers to advertise and offer jobs to U.S. workers who are equally or better qualified than the temporary guest worker sought;
3. Increase the prevailing wage standard for guest workers to the 75th percentile of the prevailing U.S. wage, so that employers do not have an incentive to hire temporary guest workers. This would also create an incentive for employers to invest in training U.S. workers;
4. Establishment of reasonable caps for all guest worker visa programs;
5. Allowing guest workers to self-petition for green cards after two years of employment; and
6. Regular audits of top skilled guest worker visa users to ensure compliance with the above provisions.

For a more in-depth analysis of these issues, see DPE’s report: *Gaming the System: Guest Worker Visa Programs and Professional and Technical Workers in the U.S.* 2012.

For more information on professional and technical workers, check DPE’s website: www.dpeaflcio.org.

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The Department for Professional Employees, AFL-CIO (DPE) comprises 22 AFL-CIO unions representing over four million people working in professional and technical occupations. DPE-affiliated unions represent: teachers, college professors, and school administrators; library workers; nurses, doctors, and other health care professionals; engineers, scientists, and IT workers; journalists and writers, broadcast technicians and communications specialists; performing and visual artists; professional athletes; professional firefighters; psychologists, social workers, and many others. DPE was chartered by the AFL-CIO in 1977 in recognition of the rapidly growing professional and technical occupations.

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3. 9 FAM 41.31 N11


6. Ibid.


9. U.S. Department of State, Bureau of Consular Affairs, Table XVI(B) Nonimmigrant Visas Issued by Classification (Including Crewlist Visas and Border Crossing Cards) Fiscal Years 2010-2014. Web.


12. Ibid., at 12.


28. Ibid.

