

**SETTING THE RECORD STRAIGHT ON  
HIGH-SKILLED IMMIGRATION**

**BY STUART ANDERSON**

**EXECUTIVE SUMMARY**

High-skilled foreign nationals make important contributions to the U.S. economy and American society, filling key positions as everything from engineers to cancer researchers. They also provide key elements of economic growth by improving productivity, increasing the growth of skilled labor, and encouraging increased business investment in the United States. Despite this, criticism fueled by allegations that some companies have laid off U.S. workers and replaced them with foreign nationals on H-1B visas has resulted in restrictive legislative proposals and arguments that America should sharply curtail the entry of skilled professionals and researchers. Data obtained from U.S. Citizenship and Immigration Services (USCIS) and other research question the main arguments leveled against high-skilled foreign nationals and illustrate the country benefits from the entry of such individuals. To understand why U.S. employers petition for high-skilled foreign nationals note that 77 percent of the full-time graduate students in electrical engineering and 71 percent in computer science at U.S. universities are international students.

Among the key findings in this report:

- An H-1B visa is, in practice, often the only way to hire a skilled foreign national to work long-term in the United States. An analysis of USCIS data on FY 2015 H-1B petitions reveals high-skilled foreign nationals are important across the U.S. economy, with approximately 26,000 different U.S. employers hiring at least one high-skilled foreign national on a new H-1B petition in 2015. Of those 26,000 employers, about 17,000 hired only 1 individual on an H-1B and about 24,600 hired between 1 and 10 H-1B visa holders.
- Among the top companies with new H-1B petitions approved in 2015 were TCS (4,674), Cognizant (3,812), Accenture (3,385), Wipro (3,079), Infosys (2,830), IBM (1,919), Tech Mahindra (1,576), HCL America (1,339), Deloitte (1,203), Amazon (1,058), Syntel (1,050), Microsoft (961), Google (833), Ernst & Young (663), Larsen & Toubro (649), PricewaterhouseCoopers (647), Intel (628), CapGemini (548), Apple (532), IGate (532), Oracle (493), Mindtree (464), Facebook (408), JPMorgan Chase (295), UST Global (287), Mphasis (274), Cisco (267) and others. The mix of companies reflects, in part, the strong demand for information technology (IT) services in the economy.
- Overall, new H-1B petitions approved for all employers in 2015 represent only a tiny proportion of the U.S. labor force at 0.07 percent. Approximately 54 percent of new H-1B visa holders each year earn a master's degree or higher.

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- Some believe that Indian-based companies receive most of the new H-1B visas each year. However, the 7 Indian-based companies who had the most H-1B petitions approved for new employment in FY 2015 received 14,610, or about 13 percent of the total approved new petitions that year. Those 14,610 individuals come to only 0.009 percent of the U.S. labor force.
- The technological revolution since 1990 has dramatically increased the demand for high-skilled technical labor, which explains why the supply of H-1B visas has been exhausted for each of the past 14 fiscal years (from FY 2004 through FY 2017). Back in 1990, the World Wide Web was unavailable for individuals on a global scale and smartphones and social media did not exist. That means when Congress set the annual limits on H-1B visas (65,000) and employment-based green cards (140,000) in the 1990 Act, it could not have anticipated the technological transformations in the world that would make those annual limits inadequate.
- Neither the law nor reliable research show foreign nationals on H-1B visas are, on balance, paid less than comparable U.S. workers. That does not mean some individuals are not underpaid or taken advantage of, or that there are not employers that evade or violate the law. Nor does it mean Congress should not fix the employment-based green card situation, since some individuals are hesitant to leave their current employer if it could affect their wait for permanent residence. The wait times range from 6 to 10 years or more for most employment-based immigrants due to low annual green card quotas and per country limits.
- After comparing the median reported salaries of U.S. workers and H-1B professionals in the same fields and age groups, the Government Accountability Office (GAO) found H-1B professionals *generally earn the same or more than their U.S. counterparts*. In the category Systems Analysis, Programming, and Other Computer-Related Occupations, the median salary for an H-1B professional *is higher* (\$60,000 vs. \$58,000) than for a U.S. professional in the age group 20-29 and the same (\$70,000) in ages 30-39. Several academic studies reach similar conclusions.
- A close examination of stories in the media and understanding how and why U.S. companies contract out for work calls into question the charge that H-1B visa holders were responsible for the layoffs at Southern California Edison, Disney and other companies. A critical report of management following a shooting in the company's IT department appears to have been the impetus for the decision to contract out work at Southern California Edison, while Disney had been contracting out IT services for many years with no allegation it had anything to do with immigration, including a \$1.3 billion contract 10 years earlier that resulted in 4 times as many people laid off as in 2015. More generally, substantial evidence exists that companies decide to contract out for normal business reasons, including focusing on core competencies

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and gaining access to new technology and solutions. Experts who advise companies on whether to contract out services explain that these decisions are made without regard to immigration law and involve competitive bidding, which means a company would not know prior to deciding to outsource a function which contractor it would choose or the makeup of the workers who would conduct the transition to a new system under the contract.

- Contracting out or outsourcing and potential layoffs happen whether or not H-1B visa holders appear on a company's site, but it appears to be the physical presence of a foreign national that spurs media attention. Citizens Bank of Rhode Island did the exact same thing as other companies – hiring a contractor that employs people abroad and laying off hundreds of incumbent employees whose work became redundant as a result. Yet Citizens Bank received virtually no negative media attention because no H-1B visa holders were seen on-site during the transition to the new contract, which was accomplished via the web and phone.
- Once a contracting out decision is made by a company, some employees, unfortunately, are likely to lose their jobs regardless of whether H-1B visa holders are present. For context, note that every year in the U.S. economy approximately 21 million people are discharged or laid off, according to the U.S. Department of Labor, while another 33 million leave their jobs voluntarily.<sup>1</sup>
- Eliminating H-1B visas entirely would not reduce the instances of companies contracting out work or functions, according to experts on outsourcing, since the visas do not figure into company decisions on contracting out. Companies are not replacing long-time employees with new workers doing the exact same jobs, according to experts, but rather replacing the employees with new systems in an attempt to perform the function in a more efficient way, often with an offshore element. "I would say cutting off the H-1B visa program wouldn't really impact outsourcing overall, as the H-1B visa holders have a limited and specialized role in the outsourcing process (specifically, in pushing through the transition phase)," according to Alex Kozlov, director of content, Alsbridge, a leading management consulting firm.
- New technologies, such as cloud computing and automation, affect far more jobs than anything related to foreign nationals on skilled visas.
- Some have argued that government statistics show Americans are not getting jobs in science and technology fields. However, this argument relies on a federal government definition of a STEM (science,

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<sup>1</sup> Job Openings and Labor Turnover Survey News Release, Bureau of Labor Statistics, U.S. Department of Labor, March 17, 2016.

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technology, engineering and math) “occupation” that is narrow and fails to count millions of people who work in jobs that use their science and engineering (S&E) degrees. For example, a professor of physics would *not* count as working in a STEM occupation but instead would be listed in Census data as a postsecondary teacher. An engineer promoted to management no longer counts as working in a STEM occupation. Tim Cook, the CEO of Apple, is considered not to be working in a STEM occupation.

- “According to the 2013 National Survey of College Graduates (NSCG), nearly 17.7 million college graduates reported that their jobs required at least this level of technical expertise in one or more S&E fields; this figure is almost three times as large as the nearly 6 million college graduates employed in S&E occupations,” explains the National Science Foundation’s *Science and Engineering Indicators 2016*. In other words, *nearly 12 million people* with a STEM degree are not classified by the federal government as working in a STEM occupation but report “their jobs required at least this level of technical expertise in one or more S&E fields.” That means any attempt to define the STEM job market as including only those working in a STEM “occupation” would be misleading, since it would ignore almost 12 million people using their degrees in the U.S. labor market.
- Degrees in computer science and electrical engineering have the highest “return on investment” (ROI) of any degrees other than a degree in petroleum engineering, according to the website Launch My Career Colorado, a web-based tool endorsed by the state of Colorado. That would not be the case if obtaining a degree in those fields was a poor career choice, as some contend. A degree in computer science at UC-Boulder would bring a return on investment of \$875,930, while a degree in psychology at UC-Boulder would bring a return on investment of only \$131,154. Return on investment is “the estimated additional income during the next 20 years earned by a college graduate over and above the earnings of a high school graduate.”
- Between 1990 and 2010, the number of college degree holders outside the United States increased from 119 million to 303 million, more than doubling. During the same period, the U.S. share of world college degree holders declined from 26 percent to 18 percent. It is understandable U.S. employers would seek access to the global labor pool, since most of the world’s educated people live (or were born) outside the United States.
- Since 1999, the H-1B fees paid by companies have funded more than 70,000 scholarships for U.S. students in math and science through the National Science Foundation. Overall, U.S. employers have paid approximately \$5.2 billion in fees associated with petitioning H-1B visa holders since 1999.

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- The benefits to the U.S. economy of admitting highly skilled foreign-born individuals include raising productivity, adding to the growth of high-skilled labor, increasing wages and jobs, complementing native-born labor, starting successful businesses, working in important positions for cutting edge companies, paying taxes, funding scholarships (via H-1B fees), contributing patents, and providing a source of highly educated individuals that helps keep jobs in America. In addition, attracting international students is important to providing a sufficient number of students and researchers to maintain academic programs in certain fields for U.S. students at many U.S. universities.

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## **BACKGROUND: WHAT ARE H-1B VISAS AND EB GREEN CARDS?**

H-1Bs visas are economically important because without such visas high-skilled foreign nationals generally could not work or remain in the United States.<sup>2</sup> H-1B visas are temporary visas and permit foreign nationals, generally with at least a B.A. or its equivalent, to work in the United States on short-term projects, for longer-term work or prior to receiving a green card (permanent residence). H-1B status can last for up to 6 years (with a renewal after three years) and can be extended in one-year increments beyond that for those waiting for employment-based green cards.<sup>3</sup>

In addition to complying with a series of complex rules, when hiring an H-1B professional companies must pay the higher of the prevailing wage or actual wage paid to “all other individuals with similar experience and qualifications for the specific employment in question.”<sup>4</sup> H-1B visas were not “created” in 1990. Starting back in the 1950s, H-1s could enter the United States on a temporary basis. The 1990 law restricted the use of H-1s, forming a new category known as H-1B, that provides for “dual intent,” which allowed H-1B visa holders to intend to become permanent residents (green card recipients). But the 1990 law also placed a limit of 65,000 on the number of new H-1B visa holders each year.

**Table 1**  
**New H-1B Petitions in Context of the U.S. Labor Force**

<b>New H-1B Petitions as a Percentage of U.S. Labor Force (2015)</b>	<b>New H-1B Petitions for Top 7 Indian-based Company and as a Percentage of U.S. Labor Force (2015)</b>
0.07 percent	14,610 (0.009 percent)

Source: U.S. Citizenship and Immigration Services. Data for “initial” petitions in FY 2015. Additional calculations performed based on BLS data.

Employment-based (EB) green cards allow individuals to stay permanently in the United States. Due to the long waits for EB green cards because of the low annual quota of 140,000 (about half of which is used by the dependents of those sponsored), a high-skilled foreign national will almost always obtain H-1B status before receiving permanent residence. The wait times can last 6 to 10 years or longer, depending on the country of origin and category.<sup>5</sup>

<sup>2</sup> Other visa categories have restrictions that limit their applicability to most high-skilled foreign nationals, such as an L-1 visa, which requires working abroad for a company for at least a year and then qualifying as a manager, executive or an employee with “specialized knowledge.”

<sup>3</sup> See also Stuart Anderson, *H-1B Visas Essential to Attracting and Retaining Talent in America*, NFAP Policy Brief, National Foundation for American Policy, May 2013.

<sup>4</sup> Section 212(n)(1) of the Immigration and Nationality Act.

<sup>5</sup> *Reforming America’s Legal Immigration System*, NFAP Policy Brief, National Foundation for American Policy, September 2015.

## **H-1B VISAS IMPORTANT TO MANY EMPLOYERS AND ACROSS THE ECONOMY**

An analysis of U.S. Citizenship and Immigration Services (USCIS) data on FY 2015 H-1B petitions reveals illuminating facts about high-skilled foreign nationals, the distribution of H-1B visas, and the importance of H-1Bs to many employers in the United States. The National Foundation for American Policy obtained the data from USCIS.

Approximately 26,000 different U.S. employers hired at least one high-skilled foreign national on a new H-1B petition in 2015, according to USCIS data. Of those 26,000 employers, about 17,000 hired only 1 individual on an H-1B. Approximately 23,435 employers hired between 1 and 5 H-1B visa holders, while about 24,600 hired between 1 and 10 H-1Bs.<sup>6</sup> The diversity of employers should not be surprising, since, as noted, an H-1B visa is, in practice, often the only way to hire a skilled foreign national long-term in the United States.

Among the top companies with new H-1B petitions approved in 2015 were TCS (4,674), Cognizant (3,812), Accenture (3,385), Wipro (3,079), Infosys (2,830), IBM (1,919), Tech Mahindra (1,576), HCL America (1,339), Deloitte (1,203), Amazon (1,058), Syntel (1,050), Microsoft (961), Google (833), Ernst & Young (663), Larsen & Toubro (649), PricewaterhouseCoopers (647), Intel (628), CapGemini (548), Apple (532), IGate (532), Oracle (493), Mindtree (464), Facebook (408), JPMorgan Chase (295), UST Global (287), Mphasis (274), Cisco (267) and others. (See Table 2.) The mix of companies reflects, in part, the strong demand for information technology (IT) services, as more U.S. companies focus on core competencies and contract with firms to deliver specialized IT services.

## **INDIAN-BASED COMPANIES DO NOT USE MOST OF THE VISAS**

Senator Richard Durbin (D-IL) expressed concern at a Congressional hearing that two Indian-based companies (TCS and Infosys) use “more than half” of the annual H-1B quota.<sup>7</sup> Examining the FY 2015 numbers shows this statement is not accurate. TCS and Infosys combined had approximately 7 percent (7,570 petitions) of the 109,292 H-1B petitions approved for initial employment in FY 2015.

Some have argued that Indian-based companies receive most of the new H-1B visas each year. However, if one adds up the 7 Indian-based companies who had the most H-1B petitions approved for new employment, it comes to 14,610 in 2015, or about 13 percent of the total approved new petitions that year.<sup>8</sup>

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<sup>6</sup> USCIS. Estimates made on numbers of employers to account for multiple entries for the same employer in some cases based on similar names in the data provided.

<sup>7</sup> Statements by Senator Richard Durbin at “The Impact of High-Skilled Immigration on U.S. Workers,” Subcommittee on Immigration and the National Interest, Senate Judiciary Committee, February 25, 2016.

<sup>8</sup> *The New York Times* cited these same 7 Indian-based companies having 16,573 approved initial petitions in FY 2014. Haeyoun Park, “How Outsourcing Companies are Gaming the Visa System,” *New York Times*, November 10, 2015. The 14,610 approved initial petitions in FY 2015 for these 7 companies comes to 17 percent of the 85,000 limit (65,000 plus 20,000 exemption for individuals with a graduate degree from a U.S. university.)

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The belief that Indian-based companies use most of the H-1B visas is not surprising, since context is lacking in evaluating H-1B numbers. The size of the U.S. economy is \$18 trillion and the size of the U.S. labor force is 158 million. The 14,610 individuals with new H-1B petitions from the 7 leading Indian-based companies come to 0.009 percent of the U.S. labor force, hardly an overwhelming proportion.<sup>9</sup> In addition, the 109,292 new H-1B petitions approved overall in 2015 represent a tiny proportion of the U.S. labor force at 0.07 percent.

**Table 2**  
**Top 30 Employers of New H-1B Approved Petitions (FY 2015)**

<b>EMPLOYER</b>	<b>New Approved H-1B Initial Petitions (FY 2015)</b>
<b>TCS</b>	4,674
<b>Cognizant</b>	3,812
<b>Accenture</b>	3,385
<b>Wipro</b>	3,079
<b>Infosys</b>	2,830
<b>IBM</b>	1,919
<b>Tech Mahindra</b>	1,576
<b>HCL America</b>	1,339
<b>Deloitte</b>	1,203
<b>Amazon</b>	1,058
<b>Syntel</b>	1,050
<b>Microsoft</b>	961
<b>Google</b>	833
<b>Ernst &amp; Young</b>	663
<b>Larsen &amp; Toubro</b>	649
<b>PricewaterhouseCoopers</b>	647
<b>Intel</b>	628
<b>CapGemini</b>	548
<b>Apple</b>	532
<b>IGate</b>	532
<b>Oracle</b>	493
<b>Mindtree</b>	464
<b>Facebook</b>	408
<b>JPMorgan Chase</b>	295
<b>UST Global</b>	287
<b>Mphasis</b>	274
<b>Cisco</b>	267
<b>Yahoo!</b>	251
<b>Goldman Sachs</b>	243
<b>NTTData</b>	220

Source: U.S. Citizenship and Immigration Services; National Foundation for American Policy.

<sup>9</sup> The new H-1B visa holders for the 7 leading Indian-based companies could all fit together in at least 10 different high school football stadiums in Texas. <http://www.wideopencountry.com/10-biggest-high-school-football-stadiums-texas/>.



## TECHNOLOGICAL REVOLUTION, NOT “CHEAP” WORKERS, SPURRED DEMAND

The technological revolution since 1990 has increased the demand for high-skilled technical labor.<sup>10</sup> It would not be necessary to make such an obvious point if not for the frequent statements that the H-1B limit is reached every year only because employers want “cheap labor.” In the real world of business, employers have increasingly sought to hire both U.S. and foreign-born individuals with technical skills over the years because online commerce, mobile applications, social media and other advances since 1990 have spurred the demand for individuals and service companies with skills in these areas. One result is that the supply of H-1B visas has been exhausted for the past 14 fiscal years (from FY 2004 through FY 2017).

Google, Facebook and Amazon, three of the world’s most transformative companies, did not exist 25 years ago. In addition, the central focus of each of those companies – search engines, social media and e-commerce – also did not exist for consumers. The World Wide Web itself was unavailable for individuals on a global scale until the early 1990s. That means in 1990, when Congress set the annual limits on H-1B visas (65,000) and employment-based green cards (140,000), it could not have anticipated the incredible technological transformations in the world that would help make those annual limits inadequate.<sup>11</sup>

**Table 3**  
**Technological Advances Since 1990**

TECHNOLOGICAL ADVANCE	1990	2016
<b>World Wide Web*</b>	Did not exist	3.2 billion users worldwide, integrated into operations of all major companies.
<b>Smartphones</b>	Did not exist	Over 2 billion owners; have transformed entire industries.
<b>Mobile Applications</b>	Did not exist	Over 179 billion app downloads yearly on mobile devices.
<b>Social Media</b>	Did not exist	74% of U.S. Internet users visit a social media site.
<b>Streaming Music</b>	Did not exist	164 billion songs streamed in U.S. in 2014.
<b>Streaming Video</b>	Did not exist	84% of Internet traffic will be streaming video by 2018.
<b>Gaming over the Internet</b>	Did not exist	671 million people worldwide play online games.

Source: National Foundation for American Policy, Money, The Telegraph, Forbes, Pew Research Center, Nielsen SoundScan, Cisco, comScore. \*Software for World Wide Web not distributed widely until 1991; in 1990 the World Wide Web did not exist for individuals on a global scale.

<sup>10</sup> See Stuart Anderson, *The World Has Changed Since 1990, U.S. Immigration Policy Has Not*, NFAP Policy Brief, National Foundation for American Policy, September 2015.

<sup>11</sup> In 2014, Congress added a 20,000 exemption from the 65,000 annual limit for individuals with a master’s degree or higher from a U.S. university.

**Table 4**  
**H-1B VISAS ISSUED AGAINST THE CAP BY FISCAL YEAR**

<u>Year</u>	<u>CAP*</u>	<u>#Issued</u>	<u>#Unused</u>
1992	65,000	48,600	16,400
1993	65,000	61,600	3,400
1994	65,000	60,300	4,700
1995	65,000	54,200	10,800
1996	65,000	55,100	9,900
1997	65,000	65,000	0
1998	65,000	65,000	0
1999	115,000	115,000	0
2000	115,000	115,000	0
2001	195,000	163,600	31,400
2002	195,000	79,100	115,900
2003	195,000	78,000	117,000
2004	65,000	65,000	0
2005	65,000	65,000	0
2006	65,000	65,000	0
2007	65,000	65,000	0
2008	65,000	65,000	0
2009	65,000	65,000	0
2010	65,000	65,000	0
2011	65,000	65,000	0
2012	65,000	65,000	0
2013	65,000	65,000	0
2014	65,000	65,000	0
2015	65,000	65,000	0
2016	65,000	65,000	0
2017	65,000	65,000	0

Source: Department of Homeland Security; National Foundation for American Policy.  
 \*Does not include exemptions from the cap. Exemptions from the cap include those hired by universities and non-profit research institutes and 20,000 individuals who received a master's degree or higher from a U.S. university.

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As pointed out in previous NFAP research, the market has determined the use of H-1B visas.<sup>12</sup> When Congress raised the limit to 195,000 a year in FY 2002 and 2003, fewer than 80,000 petitions were approved against the cap in those years, leaving 230,000 H-1B visas unused in those two years. Companies did not hire more H-1Bs because the cap was higher. (See Table 4.)

**WAGES AND FEES: CHEAP LABOR FEARS EXAGGERATED**

After comparing the median reported salaries of U.S. workers and H-1B professionals in the same fields and age groups, the Government Accountability Office (GAO) found H-1B professionals *generally earn the same or more than their U.S. counterparts*.<sup>13</sup>

In the category Systems Analysis, Programming, and Other Computer-Related Occupations, the median salary for an H-1B professional *is higher* (\$60,000 vs. \$58,000) than for a U.S. professional in the age group 20-29 and the same (\$70,000) in ages 30-39.<sup>14</sup> (See Table 5 below.)

**Table 5  
Median Reported Salaries of H-1B and U.S. Workers: Systems Analysis, Programming, and Other Computer-Related Occupations**

Age Group	H-1B	U.S. Workers
20-29	\$60,000	\$58,000
30-39	\$70,000	\$70,000

Source: *H-1B Visa Program: Reforms Are Needed to Minimize the Risks and Costs of Current Program*, Government Accountability Office, GAO-11-26, January 2011, Table 1. Salaries are 2008.

The results show that when discussing salaries, it is important to compare apples with apples. In other words, one should not assume something is wrong when a difference in years of experience (or skill level or language ability) results in different salaries for individuals.<sup>15</sup>

<sup>12</sup> *H-1B Visas Essential to Attracting and Retaining Talent in America*.

<sup>13</sup> *H-1B Visa Program: Reforms Are Needed to Minimize the Risks and Costs of Current Program*, Government Accountability Office, GAO-11-26, January 2011. To conduct the research, the GAO analyzed Current Population Survey (CPS) data on U.S. workers and information on H-1B salaries from the U.S. Citizenship and Immigration Services (USCIS) CLAIMS database.

<sup>14</sup> All reported salaries in this section can be found at GAO, p. 42, Table 1.

<sup>15</sup> In the GAO analysis, in the age group 40-50, any wage advantage disappears for H-1B professionals and becomes a U.S. professional advantage. However, one should not assume this means that employers begin to underpay H-1B visa holders once they reach age 40. Nearly 90 percent of H-1B visa holders are between the ages of 20 and 39; only 9 to 10 percent are 40 or older. It is likely the salaries reflect some combination of superior quality or work experience for U.S. professionals age 40 to 50 vs. individuals on an H-1B visa in that age range. In other words, foreign nationals with more desirable skills or work experience may be more likely to have entered the U.S. labor market years earlier than in the 40 to 50 range captured in these data.

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In the category Electrical/Electronics Engineering Occupations, in the age group 20-39, the median salary for an engineer in H-1B status was higher than for a U.S. engineer – \$80,000 vs. \$75,000.<sup>16</sup> (See Table 6.)

**Table 6**  
**Median Reported Salaries of H-1B and U.S. Workers: Electrical/Electronics Engineering Occupations**

Age Group	H-1B	U.S. Workers
20-39	\$80,000	\$75,000

Source: *H-1B Visa Program: Reforms Are Needed to Minimize the Risks and Costs of Current Program*, Government Accountability Office, GAO-11-26, January 2011, Table 1. Salaries are 2008.

These results should not be surprising. Neither the law nor reliable research show foreign nationals on H-1B visas are, on balance, paid less than comparable U.S. workers. That does not mean some individuals are not underpaid or taken advantage of, or that there are not employers that evade or violate the law. Nor does it mean Congress should not fix the employment-based green card system, since some individuals are hesitant to leave their current employer if it could affect their wait for permanent residence. But if the question is whether foreign nationals on H-1B visas are systematically underpaid and are, therefore, only hired because of such underpayment, then the evidence shows that answer is “no.”

As noted earlier, under the law an employer hiring an individual in H-1B status must pay “the actual wage level paid by the employer to all other individuals with similar experience and qualifications for the specific employment in question” or “the prevailing wage level for the occupational classification in the area of employment, *whichever is greater*. . .”<sup>17</sup> Some have argued that prevailing wage determinations understate the market wage. But even if that were the case, the requirement is to pay *the higher of the prevailing or actual wage* paid to similar U.S. professionals.

Critics often cite wage data maintained by the Department of Labor, which, while publicly available, does not necessarily indicate what an H-1B professional is being paid. The actual wage is often higher but that information is contained not on the publicly available DOL forms, but on the I-129 forms filed with U.S. Citizenship and Immigration Services (USCIS). The National Foundation for American Policy asked a law firm to select a random sample of H-1B cases from among its client base, with many in high technology fields. Among the 100 randomly selected cases, *the average actual wage was more than 22 percent higher than the prevailing wage*. While this is not definitive proof that actual wages are always, on average, 22 percent higher than prevailing wages, it shows,

<sup>16</sup> Note that the GAO stated in some categories it needed to combine age groups to have sufficient sample sizes.

<sup>17</sup> Section 212(n)(1) of the Immigration and Nationality Act.

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when combined with other evidence, that analyses utilizing prevailing wage data to claim H-1B professionals are underpaid are not reliable.<sup>18</sup>

In addition to the GAO research cited above, other studies confirm H-1B visa holders are not generally hired at wages lower than comparable U.S. professionals. A study by Madeline Zavodny, then a research economist at the Federal Reserve Bank of Atlanta, found, "H-1B workers [also] do not appear to depress contemporaneous earnings growth." As to unemployment, the study concluded that the entry of H-1B computer programmers "do not appear to have an adverse impact on contemporaneous unemployment rates." The study also noted that some results "do suggest a positive relationship between the number of LCA [Labor Condition] applications and the unemployment rate a year later." Zavodny concluded: "None of the results suggest that an influx of H-1Bs as proxied by Labor Condition Applications filed relative to total IT employment, lower contemporaneous average earnings. Indeed, many of the results indicate a positive, statistically significant relationship." That would mean H-1B employment is associated with better job conditions for natives, which could be because H-1B professionals are complementary to native professionals.<sup>19</sup>

A study by University of Maryland researchers Sunil Mithas and Henry C. Lucas, Jr., examined the skills and compensation of over 50,000 IT professionals in the United States between 2000 and 2005. The study found foreign-born professionals in information technology (IT) earned more than their native counterparts. "[C]ontrary to popular belief, non-U.S. citizen IT professionals are not paid less compared to American IT professionals. More broadly, the evidence in this study provides indirect evidence that visa and immigration policies so far have not had any adverse impact on the wages of American IT professionals due to any relatively lower compensation of foreign IT professionals."<sup>20</sup> Mithas and Lucas concluded, "To the extent supply of high-skill foreign IT professionals in the U.S. economy might induce skill-biased technical change (Acemoglu 1998), they not only benefit American professionals with whom they are complements by increasing the skill premium for all IT professionals, but they also create spillover effects in upstream and downstream sectors of the economy."<sup>21</sup>

Other economists have made similar findings. "Using unique individual level data, obtained through a FOIA from USCIS, on the holders of H-1B visas issued in 2009, our analysis does not support the notion that H-1B workers are relatively low-skilled or have lower earnings than U.S. born workers," according to a paper by economists Magnus Lofstrom and Joseph Hayes with the Public Policy Institute of California. "In fact, we find that overall H-1B

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<sup>18</sup> *H-1B Visas, Enforcement, Outsourcing and U.S. Workers: An H-1B Primer*, NFAP Policy Brief, National Foundation for American Policy, May 2007.

<sup>19</sup> Madeline Zavodny, "The H-1B Program and Its Effects on Information Technology Workers," Federal Reserve Bank of Atlanta, *Economic Review*, Third Quarter 2003.

<sup>20</sup> S. Mithas and H.C. Lucas, "Are Foreign IT workers Cheaper? U.S. Visa Policies and Compensation of Information Technology Professionals," *Management Science* (56:5) 2010, p. 762.

<sup>21</sup> *Ibid.*, p. 762.

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workers in STEM occupations have higher earnings than their otherwise observationally similar U.S. born counterparts. In our occupation-specific analysis we find that H-1B workers in two of the five occupation groups analyzed (the largest occupation group, IT, and post-secondary education) have higher earnings than their otherwise observationally similar U.S. born counterparts. In the other three occupation groups (health, engineering and math and sciences) we fail to find convincing evidence of lower earnings among H-1B workers.”<sup>22</sup> Lofstrom and Hayes conclude, “Overall, the data point towards a picture of comparatively highly skilled workers with earnings at least on par with those of U.S. born workers.”<sup>23</sup>

**HIGH FEES, MANY AUDITS AND LONG DELAYS TO START WORK**

In evaluating whether H-1B professionals are “cheaper” to hire, one needs to take into account not only the salaries, which the research cited above shows are generally the same or higher for comparable workers, but also the significant fees and costs of hiring foreign nationals. Moreover, the inability for a foreign national to start working in a timely manner (often several months at least from the time of petition) and the uncertainty of knowing if an application even will be approved are additional costs for companies, which crave certainty whenever possible.

**Table 7  
Costs to Sponsor H-1B Visa Holder**

<b>EMPLOYER COSTS FOR H-1B VISAS</b>	<b>AMOUNT</b>
<b>Attorney Fees</b>	\$1,000 to \$3,000
<b>Training and Scholarship Fee</b>	\$1,500 (\$750 if fewer than 25 employees)
<b>Anti-Fraud Fee</b>	\$500
<b>Application Fee</b>	\$325
<b>Consular Processing</b>	\$190
<b>Visa Fee</b>	\$0 to 800 (based on reciprocity)
<b>Premium Processing Fee</b>	\$1,225 (optional)
<b>Employers of 50% of U.S. Workforce in H-1B/L-1 Status</b>	\$4,000
<b>H-4 Dependent</b>	\$740 to \$1,630
<b>H-1B Extension (Potentially the Same Fees Apply)</b>	\$2,265 to \$8,370
<b>TOTAL H-1B COSTS</b>	<b>\$2,765 to \$22,710</b>
<b>ADDITIONAL COST TO SPONSOR FOREIGN NATIONAL FOR PERMANENT RESIDENCE (Green Card)</b>	<b>\$7,800 to \$13,770 (not incl. family members)</b>

Source: *Navigating the U.S. Employment-Based Immigration System*, American Council on International Personnel and the Society for Human Resource Management, 2015, pp. 62-63. Updated to reflect recent legislation.

<sup>22</sup> Magnus Lofstrom and Joseph Hayes, “H-1Bs: How Do They Stack Up to U.S. Workers?” IZA Discussion Paper #6259. December 2011, pp. 14-15.

<sup>23</sup> *Ibid.*, p. 15.

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Companies must pay the required wage, as well as legal and government fees for an H-1B that could reach \$8,850 for an initial petition and another \$8,370 for an extension, according to the Council for Global Immigration and the Society for Human Resource Management.<sup>24</sup> The estimated cost to sponsor a foreign national all the way from an H-1B petition through the green card process for permanent residence could reach approximately \$36,000 to \$50,000, particularly if family members are also sponsored.<sup>25</sup> Companies can also pay up to \$10 million a year in filing fees when moving employees in H-1B status to work in new geographic locations.<sup>26</sup>

While policymakers assume there is little oversight of employers that petition for H-1B visa holders, in fact, such employers receive a significant amount of scrutiny in the form of audits. U.S. government auditors conducted over 30,000 site visits to employers using H-1B visas in FY 2010 and FY 2011.<sup>27</sup> That is a large number of audits considering in a typical year there are about 26,000 employers of new H-1B visa holders and almost 66 percent hire only one H-1B professional.<sup>28</sup> Moreover, while USCIS audited more than 14,000 H-1B cases in FY 2010, including thousands of site visits to companies, only 1 percent of the cases audited (192) were referred for a fraud investigation, according to a 2011 report by the USCIS Fraud Detection and National Security. Approximately 3.5 percent (495) of the visas were revoked, which, according to attorney R. Blake Chisam, “is an agency action that is not limited to fraudulent petitions, but may relate to petitions in which the H-1B worker simply no longer works for the petitioner.”<sup>29</sup>

## **RESPONDING TO THE ARGUMENT THAT H-1BS LEAD TO LAYOFFS**

In the past few years, allegations that Southern California Edison, Disney and other companies have laid off employees in order to replace them with “cheaper” workers on H-1B visas have received front page treatment and even commentary during presidential candidate debates. Some elected officials have seized on these stories to propose new restrictions on immigration that would virtually end high-skilled immigration to the United States.<sup>30</sup>

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<sup>24</sup> *Navigating the U.S. Employment-Based Immigration System*, Council on Global Immigration and the Society for Human Resource Management, 2015, pp. 62-63.

<sup>25</sup> *Ibid.*

<sup>26</sup> Companies and attorneys interviewed say these additional costs are a result of the USCIS Simeio Solutions decision, which stated that employers generally need to file amended H-1B petitions when working in a new location.

<sup>27</sup> American Immigration Lawyers Association, “USCIS Fraud Detection & National Security (FDNS) Directorate Answers AILA Administrative Site Visit & Verification Program (ASVVP) Questions,” June 7, 2011, and AILA Verification and Documentation Liaison Committee, USCIS NDNS Meeting, March 28, 2012. According to USCIS, “14,433 H-1B site visits were conducted in FY 2010” and 15,648 were conducted in FY 2011.

<sup>28</sup> USCIS.

<sup>29</sup> American Immigration Lawyers Association, “USCIS Fraud Detection & National Security (FDNS) Directorate Answers AILA Administrative Site Visit & Verification Program (ASVVP) Questions,” June 7, 2011, available at AILA InfoNet Doc. No. 11062243. USCIS has not released data on the number of fraud referrals that resulted in actual findings of fraud; quotation from R. Blake Chisam, *DOL Threatens Personal and Commercial Privacy in Proposal Directed Against Skilled Foreign Nationals*, NFAP Policy Brief, September 2012, p. 15. Also, *H-1B Visas Essential to Attracting and Retaining Talent in America*.

<sup>30</sup> See *The Real World Impact of Proposed High-Skilled Immigration Restrictions*, NFAP Policy Brief, National Foundation for American Policy, August 2016.

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A close examination of these stories, interviews with those who advise companies on contracting and understanding how and why U.S. companies contract out for work calls into question the central charge that H-1B visa holders were responsible for the layoffs at Southern California Edison, Disney and other companies. Simply put, substantial evidence exists that:

- 1) Companies decide to contract out for normal business reasons, including focusing on core competencies and gaining access to new technology and solutions. Eliminating H-1B visas entirely would not reduce the instances of companies contracting out work or functions, according to experts on outsourcing, since the visas do not figure into company decisions on contracting out.
- 2) Contracting out or outsourcing and potential layoffs happen whether or not H-1B visa holders appear on a company's site, but it appears to be the physical presence of a foreign national that spurs media attention. As noted below, Citizens Bank of Rhode Island did the exact same thing as other companies – hiring a contractor that employs people abroad and laying off hundreds of incumbent employees whose work became redundant as a result. Yet Citizens Bank received virtually no negative media attention because no H-1B visa holders were seen on-site during the transition to the new contract.
- 3) Once a contracting out decision is made by a company, some employees, unfortunately, are likely to lose their jobs regardless of whether H-1B visa holders are present. (To put this in context, approximately 21 million U.S. workers are discharged or laid off every year in America, according to the U.S. Department of Labor's JOLTS data, a number not affected by immigration policy.)<sup>31</sup>
- 4) According to experts in outsourcing, companies are replacing the employees with new systems with a goal of performing the function in a more efficient way, often with an offshore element.
- 5) New technologies, such as cloud computing and automation, affect far more jobs than anything related to foreign nationals on skilled visas. However, elected officials cannot outlaw technological progress, which means the default position has been to blame foreign nationals and the companies for larger global and technological forces.

To understand this issue better, it is worth reviewing the facts of some of the recent cases that have made news.

**Southern California Edison:** It is alleged that Southern California Edison laid off workers so the company could replace them with foreign workers. But given the size and scope of the company's operations, it should be hard to believe the situation was that simple. In fact, it was not that simple. The story started in December 2011, when an employee shot and killed two supervisors in information technology (IT) department of the company. After the tragedy, a management report commissioned by Southern California Edison criticized the "dysfunction" and "fundamental lack of leadership" in the IT department. In fact, in reflecting on the company's later decision to

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<sup>31</sup> Job Openings and Labor Turnover Survey, U.S. Department of Labor.



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outsource parts of the IT function, employees cited the management report and its conclusions “Some of the [Southern California Edison] employees say the outsourcing move is linked to a 2012 report that found fault with the IT management culture,” according to *Computerworld*.<sup>32</sup>

A “need to change organization culture” is a common reason companies decide to contract out a function and it appears that played a crucial role in this instance.<sup>33</sup> Despite this, when foreign nationals were seen on the company’s premises, the decision to outsource part of the IT function was blamed entirely on Southern California Edison using H-1B visa holders via a contractor, with no acknowledgement that this could be viewed as a reasonable business decision. A number of factors make it clear the employees who lost their jobs would have been laid off regardless of which contractor was chosen or even if all U.S. workers worked for the contractor. The decision to contract out and lay off workers was made before Southern California Edison could have known which contractor it would use and whether any of the contractor’s employees worked on visas. That’s because, as is often the case, the company asked a third party, in this case a law firm, to solicit bids from multiple contractors. In other words, this was not a sole-source contract aimed at using the immigration code to lay off workers, which is the allegation made by Senator Jeff Sessions.<sup>34</sup>

**Disney:** Similar to Southern California Edison, Disney was accused of laying off employees in its information technology department and replacing them with workers on H-1B visas. Also similar to Southern California Edison there appears to be no evidence that the existence of H-1Bs played a role in the overall decision to outsource work or that laid-off Disney employees would have kept their jobs if a different contractor had been chosen by Disney.

When the *Orlando Sentinel* first reported that Disney had decided to restructure its IT department away from maintenance toward innovation, the newspaper cited an expert who pointed out this was normal for the industry. But when foreign nationals appeared on-site to gather information for the new contractor, employees and later news stories began to assert that the use of visa holders caused the layoffs. Absent in the coverage was any discussion of a competitive bid process or that Disney already had been contracting out much of its IT work for years. In fact, 10 years earlier, Disney laid off about four times as many employees as in 2015 but apparently since no H-1B visa

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<sup>32</sup> Patrick Thibodeau, “Southern California Edison IT Workers ‘Beyond Furious’ Over H-1B Replacements,” *Computerworld*, February 4, 2015.

<sup>33</sup> The Hackett Group.

<sup>34</sup> Stuart Anderson, “Ted Cruz’s Bad Idea: Expel International Students from America,” *The Daily Caller*, December 15, 2015. In a February 5, 2015 floor statement, Senator Jeff Sessions stated, “Apparently, what happens is these companies sign up workers in – in this case – India, and they call up the big power company and say: Look, we have all these young people who have an education, and your salaries are real generous to them, they like your salaries, and we will just send them over on H-1B visas. They can stay 3 years and then return to their country and you can get rid of all those American workers.” Patrick Thibodeau, “Southern California Edison Layoffs Get U.S. Senate Attention,” *Computerworld*, February 6, 2015.

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holders were sighted or blamed for the layoffs, little media attention ensued. In 2005, Disney had signed deals with IBM and Affiliated Computer Services worth a combined \$1.3 billion that was reported as leading to 1,000 layoffs.<sup>35</sup>

**Cengage:** Ohio-based textbook publisher Cengage was faced with a dilemma. It had recently emerged from bankruptcy but more importantly, it faced a sea-change in the publishing industry. Cengage had not kept up with its customers' desires to view its products electronically and, like other companies, struggled to survive and profit financially from these changes. The company needed to move quickly from publishing mostly large bulky textbooks to the digitalization of its product lines. To accomplish this, it turned to an outside contractor with experience in this area. As part of this restructuring, it laid off 75 information technology workers, 20 of whom were rehired by the contractor.<sup>36</sup> To understand the type of competitive pressures textbook publishers like Cengage are operating under, note, for example, the recent announcement by a coalition of 38 community colleges to create open source curriculum to minimize or even eliminate the need for students to buy textbooks.<sup>37</sup>

The company's management felt it was being responsible both to shareholders and to the 97 percent of employees not affected by the layoffs, since none of them would keep their jobs if the company failed to right the ship. Despite this, Cengage was met with criticism. Could Cengage have retrained all its laid-off workers to do the work the contractor intended to do? It would be difficult to second-guess the company without knowing if this was even a viable solution. "We now serve more customers with software than print materials," according to a Cengage spokesperson. "We determined that we needed a more flexible staffing model that could better serve the cyclical nature of our business, and a different model of software support for our customers. To do this quickly and efficiently, we needed the support of an outside partner. We chose Cognizant, a U.S. firm that supports several companies in the education industry."<sup>38</sup>

**ANALYSIS:** H-1B visa holders are not central to the decision to outsource a function, but their presence creates controversy among employees and generates news coverage. In fact, without the presence of foreign nationals, those laid-off employees would be considered no different than the millions of Americans who unfortunately lose their jobs each year. The proof? Virtually no news coverage or controversy was generated in 2015 when Citizens Bank of Rhode Island announced a restructuring that would result in work being done overseas by a contractor and the layoff of over 150 IT professionals. Since no foreign nationals were seen at the bank during the transition phase,

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<sup>35</sup> Linda Rosencrance, "IBM Signs \$730M IT Services Deal with Disney," *Computerworld*, June 14, 2005. In January 2016, two former Disney employees filed a federal lawsuit against Disney.

<sup>36</sup> Patrick Thibodeau, "Fury and Fear as IT Jobs Go to India," *Computerworld*, November 9, 2015.

<sup>37</sup> "Achieving the Dream Launches Major National Initiative to Help 38 Community Colleges in 13 States Develop New Degree Programs Using Open Educational Resources," Achieving the Dream, News Release, June 14, 2016.

<sup>38</sup> "Fury and Fear as IT Jobs Go to India," *Computerworld*.

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nobody could blame H-1B visa holders for the layoffs. “IT employees who were contacted say this ‘knowledge transfer’ is being accomplished remotely, over the Web and in teleconferences,” according to *Computerworld*.<sup>39</sup>

“I would say cutting off the H-1B visa program wouldn’t really impact outsourcing overall, as the H-1B visa holders have a limited and specialized role in the outsourcing process (specifically, in pushing through the transition phase),” concludes Alex Kozlov, director of content, Alsbridge, a leading management consulting firm.<sup>40</sup> A transition from one system to a new system is needed to avoid service disruptions, etc. As to the allegation that employees are “training their replacements,” Steve Hall of ISG, a management consultant, says he can understand why the task of the new team acquiring information can “feel like training” to the incumbent employees but that it is about “gaining an understanding of the environment and applications.” He said, “This includes detailed sessions with the client personnel, including potentially laid-off employees, who may contain unique knowledge of the environment or business functionality.”<sup>41</sup> It is unlikely the people receiving the information will even be doing the same type of work, particularly since companies are hoping to gain efficiencies by having the outside contractor deliver the work in a new way. Even if Steve Hall is correct, he and others would acknowledge it doesn’t mean the process has not proven distressing for U.S. employees and alternative ways of gaining the information should not be considered.

Contracting out non-core functions is so common – and so important, particularly in troubled industries like publishing – that one of the larger outsourcing deals to receive attention in 2016 involved Tribune Publishing, which owns the *Los Angeles Times*. Editorial commentary at the *Los Angeles Times* attacked Southern California Edison and Disney for doing the same thing as its parent company, namely contracting out a part of its IT department and laying off “200 IT employees” to “create a more agile operating environment and to drive our overall business transformation.” Similar to Disney, Tribune Publishing hoped the move, which included work to be performed offshore, would “create more opportunity for innovation.”<sup>42</sup> The *Charlotte Observer* also criticized the use of H-1B visas as an element of contracting out work at the same time its owner, McClatchy, did the same thing as Tribune Publishing, Disney and other companies.<sup>43</sup>

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<sup>39</sup> Patrick Thibodeau, “As it Sets IT layoffs, Citizens Bank Shifts Work to India Via Web,” *Computerworld*, August 13, 2015.

<sup>40</sup> Alex Kozlov. Email interview.

<sup>41</sup> Steve Hall. Email interview.

<sup>42</sup> Patrick Thibodeau, “Publisher of LA Times and Chicago Tribune Sends IT Jobs Overseas,” *Computerworld*, May 17, 2016.

<sup>43</sup> “In Charlotte, Foreign Workers Replace Americans in Tech Roles,” *Charlotte Observer*, June 3, 2016.

## **THE ARGUMENT THAT AMERICANS NO LONGER GET “STEM” JOBS**

Government statistics can provide useful information – except when those statistics don’t. A case in point is the way the federal government defines “STEM” (science, technology, engineering and math) occupations in a way that results in ignoring *nearly 12 million* who use their STEM degree in their jobs. This leads some opponents of immigration to make false arguments about the state of the job market.

The federal government’s definition of a STEM “occupation” is narrow and fails to count millions of people who work in jobs that use their science and engineering (S&E) degrees. For example, a professor of physics would *not* count as working in a STEM occupation but instead would be listed in Census data as a postsecondary teacher. An engineer promoted to management no longer counts as working in a STEM occupation. Tim Cook, the CEO of Apple, is considered not to be working in a STEM occupation.

“According to the 2013 National Survey of College Graduates (NSCG), nearly 17.7 million college graduates reported that their jobs required at least this level of technical expertise in one or more S&E fields; this figure is almost three times as large as the nearly 6 million college graduates employed in S&E occupations,” explains the National Science Foundation’s *Science and Engineering Indicators 2016*.<sup>44</sup>

In other words, *nearly 12 million people* with a STEM degree are not classified by the federal government as working in a STEM occupation but report “their jobs required at least this level of technical expertise in one or more S&E fields.” That means any attempt to define the STEM job market as including only those working in a STEM “occupation” would be misleading, since it would ignore almost 12 million people. However, that has not stopped critics.

In a May 2015 press release, Senator Jeff Sessions (R-AL) stated, ““Each year, universities graduate twice as many students with STEM [science, technology, engineering, and math] degrees as find STEM jobs. According to the Census Bureau, more than 11 million Americans with STEM degrees are not employed in STEM jobs – or 3 in 4 STEM degree holders.” The Senator’s statement implies that 75 percent of the people in America with STEM degrees can’t find jobs in their field. If that was the case, would any American parent let their child pursue a degree in a science or engineering field?

Degrees in computer science and electrical engineering have the highest “return on investment” (ROI) of any degrees other than a degree in petroleum engineering, according to the website Launch My Career Colorado, a

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<sup>44</sup> National Science Foundation’s *Science and Engineering Indicators 2016*, Chapter 3, p. 18.

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web-based tool endorsed by the state of Colorado to help students and parents to evaluate colleges and potential careers. A degree in computer science at UC-Boulder would bring a return on investment of \$875,930, while a degree in electrical engineering at UC-Denver would yield a return on investment of \$757,462. In comparison, a degree in psychology at UC-Boulder would bring a return on investment of only \$131,154. Return on investment is “the estimated additional income during the next 20 years earned by a college graduate over and above the earnings of a high school graduate.”<sup>45</sup>

The National Science Foundation reports that only 4.1 percent of individuals with a degree in computer and mathematical sciences report working involuntarily out of their field. In engineering, only 4.6 percent report working involuntarily of their field. Of course, not everyone works in their field and immigration is unlikely to be the cause in any case.<sup>46</sup>

No correlation exists between an inability to find work in a STEM field and the presence of foreign nationals in that field in the United States. Nearly three times as many individuals with degrees in the social sciences (11.8 percent), a field in which relatively few H-1B visa holders receive degrees, report working involuntarily out of their field as those with degrees in computer and mathematical sciences and engineering.<sup>47</sup>

As for the current state of the job market for those in technical fields, The Conference Board reported in a May 2016 press release almost 5 times as many online ads for positions in computer and mathematical science occupations as individuals listed as unemployed in those occupations, 569,000 online ads vs. 121,000 unemployed.<sup>48</sup> That is the best “supply/demand rate” for any occupation reported. Moreover, human resource departments say online ads measure only part of the demand for labor, since there are often more jobs than ad postings. “A job posting is a marketing piece which may represent more than one actual job,” said one HR professional. “A company may need 10 test engineers at a particular location but post only one advertisement for that role.”<sup>49</sup>

Some argue that if companies were having difficulty hiring high-skilled workers in technical fields, then U.S. government data should show median wages increasing dramatically. This argument ignores several factors. First, competition from outside the United States affects wages. The ability to hire people who can perform similar work (less expensively) in other countries limits the wages U.S. workers can demand not only in IT fields but in many other sectors, including agriculture, textiles, and manufacturing. Auto workers can no longer easily demand \$50 an

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<sup>45</sup> Mark J. Perry, “What’s the Value of a College Degree? A New Interactive Website Provides Some Answers and Much Needed Transparency,” *Carpe Diem*, June 23, 2016.

<sup>46</sup> *Science and Engineering Indicators 2016*, chapter 3, p. 58.

<sup>47</sup> *Ibid.*, p. 58.

<sup>48</sup> “Online Labor Demand Increased 39,600 in April,” News Release, The Conference Board, May 4, 2016.

<sup>49</sup> Stuart Anderson, “Tech Job Market is Strong,” *Forbes*, March 16, 2015.

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hour due to competition from auto workers in other countries.<sup>50</sup> That means it is not surprising that the wages of IT workers in the U.S. would also be affected by the wages of IT workers in India or China.

In addition, there may be statistical quirks that are hiding wage increases, including in science and technology fields. “Demographic change is keeping average wage growth artificially low,” explained *The Economist*. “The financial crisis struck when the oldest baby-boomers were nearing retirement age. As well-paid boomers retire, average wages fall. In addition, many low-wage workers, who were disproportionately likely to lose their jobs during the recession, are now returning to work, which also pulls average wages down.”<sup>51</sup>

*The Economist* goes on to note, “Recent work by researchers at the San Francisco Fed suggests that, as of the end of 2015, these biases in entries and exits from the workforce were reducing growth in median weekly earnings by about two percentage points. Those in steady employment are faring well: the Atlanta Fed’s wage index, which tracks the same individuals over time, thereby ignoring retirements and new workers, shows wage growth of 3.4% over the past year.”<sup>52</sup>

Another way to look at the issue is to compare wages in one field to another field to assess demand. For example, even if the average salary of an NFL quarterback remained the same at \$5 million a year for 3 years in a row, one would not argue that the skills of NFL quarterbacks are not in high demand. That is because the salary level of a quarterback would still be much higher than for other jobs. Similarly, salaries in high tech pay more than positions in most other fields, which demonstrates demand for this type of labor.<sup>53</sup>

## **OVERVIEW: THE BENEFITS TO AMERICA OF HIGH-SKILLED IMMIGRATION**

The benefits to the U.S. economy of admitting highly skilled foreign-born individuals can sometimes be overlooked. Those benefits include raising productivity, adding to the growth of high-skilled labor, increasing wages and jobs, complementing native-born labor, starting successful businesses, working in important positions for cutting edge companies, paying taxes, funding scholarships (via H-1B fees), contributing patents, and providing a source of highly educated individuals that helps keep jobs in America. International students also are vital because they help provide sufficient numbers and researchers to maintain academic programs in certain fields at many U.S. universities.<sup>54</sup>

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<sup>50</sup> Justin Fox, “The Autoworker Pay Premium Disappears,” *BloombergView*, September 15, 2015.

<sup>51</sup> “When Barometers Go Wrong,” *The Economist*, June 11, 2016.

<sup>52</sup> *Ibid.*

<sup>53</sup> The Conference Board, May 4, 2016.

<sup>54</sup> Stuart Anderson, *The Importance of International Students to America*, NFAP Policy Brief, National Foundation for American Policy, July 2013.

## HIGH-SKILLED IMMIGRATION HELPS RETAIN INTERNATIONAL STUDENTS

One of the best arguments for America maintaining a realistic legal immigration system for both temporary visas and permanent residence is the benefits of retaining international students. A common refrain from U.S. policymakers is that it makes no sense for America to educate bright people and send them back to their home country (or to another country) where they will compete with U.S. companies. Yet that is what happens to international students who are unable to obtain H-1B status. While an individual can remain for 12 months (or potentially longer) in Optional Practical Training (OPT), at some point he or she must be approved for an H-1B petition or an employment-based green card to remain and work long-term in the United States. Given the wait times and bureaucratic procedures for green cards, it is usually necessary at some point to be approved for an H-1B petition.

**Table 8**  
**H-1B Statistics in a Snapshot**

<b>H-1B-Led Productivity Gains</b>	Growth in foreign STEM workers “may explain between 10 and 25 percent of the aggregate productivity growth . . . that took place in the U.S.” from 1990-2010.” (Peri, Shih, Sparber)
<b>H-1B and Increased U.S. Jobs</b>	Each additional 100 approved H-1B workers associated with an additional 183 jobs among U.S. natives from 2001-2010. (Zavodny)
<b>H-1B and Increased U.S. Wages</b>	“An increase in foreign STEM workers of 1 percent of total employment increased the wage of native college educated workers (both STEM and non-STEM) over the period 1990-2000 by 4 to 6 percent.” (Peri, Shih, Sparber)
<b>H-1B Professionals Earn Comparable or Higher Wages Than U.S. Workers in Same Age Grouping</b>	Median salary Electrical/Electronics Engineering age 20-39 H-1B: \$80,000 vs. U.S. worker: \$75,000. Median salary Systems Analysis/Programming age 20-29: H-1B: \$60,000 vs. U.S. worker: \$58,000. (GAO)
<b>H-1B and Patents</b>	“A 10 percent growth in H-1B admissions correlates with an 8 percent growth in Indian invention” relative to firms outside of the computer sector less reliant on H-1Bs. (Kerr and Lincoln)
<b>New H-1B Visas in U.S. Labor Force</b>	New H-1B visa holders are 0.09 percent of U.S. labor force. (DOL)
<b>H-1B Employer Fees for Scholarships</b>	70,000 scholarships for U.S. students since 1999. (NSF)
<b>H-1B and Taxes</b>	Foreign-born with B.A. pays \$9,335 more a year in taxes than benefits received; \$20,254 more with M.A. (Zavodny)
<b>Onsite Audits of H-1B Employers</b>	14,433 H-1B site visits in FY 2010 and 15,648 in FY 2011. (USCIS)
<b>Percent of H-1B Visa Audits Referred for Fraud Investigations (FY 2010)</b>	1 percent (USCIS)

Source: National Foundation for American Policy. Data sourced in table and in report.

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For those who wonder why U.S. employers petition for high-skilled foreign nationals one need only look at enrollment at U.S. universities. International students account for 77 percent of the full-time graduate students in electrical engineering and 71 percent in computer science at U.S. universities.<sup>55</sup> (See Table 9.) In other words, if international students could not stay in the United States, American employers would only have access to 20 to 30 percent of U.S.-educated graduate level talent in these fields. That would mean ignoring not only the 70 to 80 percent of the labor pool in these fields educated in the United States but also all of the individuals educated in other countries.

**Table 9**  
**Full-time Graduate Students and the Percent of International Students by Field (2013)**

Field	Percent of International Students	Number of Full-time International Graduate Students	Number of Full-time U.S. Graduate Students
<b>Electrical Engineering</b>	77%	26,530	8,130
<b>Computer Science</b>	71%	27,787	11,481

Source: National Science Foundation, Survey of Graduate Students and Postdoctorates in Science and Engineering, <https://ncesdata.nsf.gov/webcaspar/>. U.S. students include lawful permanent residents.

Between 1990 and 2010, the number of college degree holders outside the United States increased from 119 million to 303 million, more than doubling. During the same period, the U.S. share of world college degree holders declined from 26 percent to 18 percent.<sup>56</sup> It is understandable U.S. employers would seek access to the global labor pool, since most of the world's educated people live (or were born) outside the United States.

**Table 10**  
**Growth of Educated Labor Force Outside of the United States**

	1990	2010	Percent Increase
<b>Number of College Degree Holders Outside of the United States</b>	119 million	303 million	+155 percent

Source: Barro-Lee Educational Attainment Database.

<sup>55</sup> National Science Foundation, Survey of Graduate Students and Postdoctorates in Science and Engineering, <https://ncesdata.nsf.gov/webcaspar/>. U.S. students include lawful permanent residents. If one includes part-time students, 67 percent of graduate students in electrical engineering and 57 percent in computer science are international students.

<sup>56</sup> Barro-Lee Educational Attainment Database.



## **IMMIGRANT ENTREPRENEURS AND KEY PERSONNEL IN STARTUP COMPANIES**

Without a startup visa under U.S. immigration law, H-1B status and employment-based green cards, usually the latter, generally represent the only practical way for foreign-born individuals to stay in the United States after starting a company. “Immigrants play a key role in creating new, fast-growing companies, as evidenced by the prevalence of foreign-born founders and key personnel in the nation’s leading privately-held companies,” according to a recent National Foundation for American Policy study. “Immigrants have started more than half (44 of 87) of America’s startup companies valued at \$1 billion or more and are key members of management or product development teams in over 70 percent (62 of 87) of these companies. The research finds that among the billion dollar startup companies, immigrant founders have created an average of approximately 760 jobs per company in the United States. The collective value of the 44 immigrant-founded companies is \$168 billion, which is close to half the value of the stock markets of Russia or Mexico.”<sup>57</sup>

Outstanding immigrant entrepreneurs profiled in the research included Elon Musk, founder of SpaceX; Garrett Camp, co-founder of Uber; Noubar Afeyan, co-founder of Moderna Therapeutics and 37 other companies, primarily through Flagship Ventures, the firm he heads; Jyoti Bansal, who waited 7 years for his employment-based green card to start AppDynamics, which employs 900 people and provides the equivalent of a 24/7 MRI for company websites; Amr Awadallah, co-founder of Cloudera, which allows organizations in various fields to profit from their data; Michelle Zatlyn, co-founder of CloudFlare, which uses the power of its global network to help websites with traffic and security; and other immigrant entrepreneurs.<sup>58</sup>

## **THE CONTRIBUTIONS OF IMMIGRANT CANCER RESEARCHERS**

One of the less well-known contributions of immigrants is the role played by immigrant cancer researchers. “More than 40 percent of the cancer researchers at America’s top cancer institutes are immigrants,” according to the National Foundation for American Policy. “Cancer researchers endure the same long wait for green cards as other highly skilled immigrants and their employers. The lack of reliable ways for American cancer institutes and other employers to retain top talent comes at a time when the United States faces an aging population but also the potential for great medical and technological breakthroughs to save and enhance lives.”<sup>59</sup> Immigrant scientists have played an important role in improving the cancer survival rates experienced by Americans.

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<sup>57</sup> Stuart Anderson, *Immigrants and Billion Dollar Startups*, NFAP Policy Brief, National Foundation for American Policy, March 2016. “The research involved conducting interviews and gathering information on the 87 U.S. startup companies valued at over \$1 billion (as of January 1, 2016) that have yet to become publicly traded on the U.S. stock market and are tracked by *The Wall Street Journal* and Dow Jones VentureSource. The companies, all privately-held and with the potential to become publicly traded on the stock market, are today each valued at \$1 billion or more and have received venture capital (equity) financing.”

<sup>58</sup> *Ibid.*

<sup>59</sup> Stuart Anderson, *The Contributions of Immigrants to Cancer Research in America*, NFAP Policy Brief, National Foundation for American Policy, February 2013.

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The research involved examining approximately 1,500 biographies of cancer researchers at the nation's leading cancer research centers (as measured by grants received from the National Cancer Institute). Overall, 42 percent of the researchers at the top 7 cancer research centers are foreign-born. At the University of Texas MD Anderson Cancer Center 62 percent of the cancer researchers are immigrants. *U.S. News & World Report* ranked MD Anderson the number one cancer treatment facility in the country for patients. At Memorial Sloan-Kettering Cancer Center in New York, 56 percent of the researchers are foreign-born.<sup>60</sup>

### **IMPROVING PRODUCTIVITY, RAISING WAGES AND CREATING JOBS**

Productivity and labor force growth are two key elements of a country's economic growth. "The productivity growth and skill biased growth due to growth in foreign STEM workers may explain between 10 and 25 percent of the aggregate productivity growth and 10 percent of the skill-bias growth that took place in the U.S. during the period 1990-2010," according to economists Giovanni Peri (UC, Davis), Kevin Shih (UC, Davis) and Chad Sparber (Colgate University), who researched the impact of H-1B visas.<sup>61</sup> In addition, the researchers found, "An increase in foreign STEM (science, technology, engineering and math) workers of 1 percent of total employment increased the wage of native college educated workers (both STEM and non-STEM) over the period 1990-2000 by 4 to 6 percent."<sup>62</sup> The implication is that allowing more high-skilled foreign-born individuals into the country would be a significant economic benefit to the United States.

While some people assume every job a foreign national fills means one less job for an American, there is nothing in the economic literature that supports such a zero-sum view of the world. Economist Madeline Zavodny, a professor of economics at Agnes Scott College, studied foreign-born and native employment and concluded, "The findings here suggest that expanding the H-1B program for skilled temporary foreign workers would increase employment for U.S. natives."<sup>63</sup> The study for the American Enterprise Institute and Partnership for a New American Economy examined the years 2001 to 2010. Zavodny found, "Each additional 100 approved H-1B workers being associated with an additional 183 jobs among US natives." She concluded the "results give clear evidence" that H-1B visas "correspond to greater job opportunities for US-born workers."<sup>64</sup>

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<sup>60</sup> Ibid.

<sup>61</sup> Giovanni Peri, Kevin Shih and Chad Sparber, "STEM workers, H-1B Visas and Productivity in U.S. Cities," January 29, 2013.

<sup>62</sup> Ibid.

<sup>63</sup> Madeline Zavodny, *Immigration and American Jobs*, American Enterprise Institute and Partnership for a New American Economy, 2011, p. 5.

<sup>64</sup> Ibid., p. 11.

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Zavodny notes the analysis likely understates several positive effects. “There are two reasons to think that this study, which uses annual, state-level data over a ten-year period, may actually underestimate the job-creating effects of highly skilled immigrants. First, it does not capture long-run effects if the economy benefits more from immigrants in the long run than in the short run (as suggested by other recent research). Second, it does not capture ‘spillover effects’ if immigrants create jobs in states other than the one where they work (for example, more immigration in California leads businesses to also create new jobs at a subsidiary in Indiana).”

**H-1Bs AND PATENT INCREASES**

According to research by economists William R. Kerr (Harvard Business School) and William F. Lincoln (University of Michigan), “A 10 percent growth in H-1B admissions correlates with an 8 percent growth in Indian invention” relative to firms outside of the computer sector less reliant on H-1Bs.” Kerr and Lincoln concluded, “We find that fluctuations in H-1B admissions levels significantly influence the rate of Indian and Chinese patenting in cities and firms dependent upon the program relative to their peers. Most of our specifications also find weak crowding-in effects or no effects at all for native patenting. We conclude that total invention increases with higher admission levels primarily through the direct contributions of immigrant inventors.”<sup>65</sup> Keith Maskus, an economist at the University of Colorado, found that for every 100 international students who receive science or engineering Ph.D.'s from American universities, the nation gains 62 future patent applications.<sup>66</sup>

**H-1B FEES AND SCHOLARSHIPS**

Since 1999, the H-1B fees paid by companies have funded more than 70,000 scholarships for U.S. students in math and science through the National Science Foundation, as well as hands-on science programs for more than 303,600 elementary, middle and high school students and 11,700 teachers. More than 55,000 U.S. workers have received training through the H-1B fees paid by companies.<sup>67</sup>

U.S. employers have paid approximately \$5.2 billion in fees associated with petitioning H-1B visa holders since 1999. About \$3.9 billion is from the \$1,500 fee associated with scholarships and job training (\$750 for employers with 25 or fewer full-time employees). Another approximately \$1.3 billion is from the \$500 anti-fraud fee on new H-1B and L-1 visas. These estimates do not include other filing fees or the additional fees levied against certain

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<sup>65</sup> William R. Kerr and William F. Lincoln, “The Supply Side of Innovation: H-1B Visa Reforms and U.S. Ethnic Invention,” Harvard Business School, Working Paper, 09-005, 2009, p. 29-30.

<sup>66</sup> Stuart Anderson, “The Nation’s Future is Stuck Overseas,” *The New York Times*, November 16, 2005; Keith E. Maskus, Gnanaraj Chellaraj, and Aaditya Mattoo, “The Contribution Of Skilled Immigration and International Graduate Students To U.S. Innovation,” March 17, 2005.

<sup>67</sup> National Science Foundation; FY 2013 National Science Foundation Budget Request to Congress, EHR – 19-20 and estimates on scholarships through FY 2016.

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employers to pay for border security (and health care for 9/11 first responders), nor the money employers pay at the state and local level that fund public education.<sup>68</sup>

## CONCLUSION

Congress does not “protect” U.S. workers by maintaining a low annual limit on H-1B visas or by imposing other restrictions. By restricting the flow of high-skilled foreign nationals, Congress interferes with the market flow of labor and capital that would take place absent the restrictions and encourage more jobs, innovation and investments to take place outside the United States. Today, international students make up 77 percent of the full-time graduate students in electrical engineering and 71 percent in computer science at U.S. universities, while the proportion of college degree holders educated *outside* the United States has increased dramatically in the past two decades.<sup>69</sup> To grow and compete in the global marketplace, U.S. companies will hire highly skilled foreign-born individuals. The only question is whether they will be employed inside or outside of the United States.

Rather than harming U.S. workers or the U.S. economy, H-1B visa holders contributed “between 10 and 25 percent of the aggregate productivity growth . . . that took place in the United States from 1990 to 2010,” according to economists Giovanni Peri, Kevin Shih and Chad Sparber.<sup>70</sup> Research shows H-1B visa holders are paid the same or higher than comparable U.S. professionals. More than half of U.S. startups valued at over \$1 billion had at least one immigrant founder and 70 percent had an immigrant in a key position, such as vice president of engineering, to help the company grow.

Historically, America is a nation of immigrants. And we should welcome those who come to this country to escape persecution or improve the lives of their families. We should also welcome those who study at U.S. universities and decide to stay and work for U.S. companies, as well as individuals who are educated abroad and bring to America important skills and talents. Those “yearning to breathe free” can also have a college degree.

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<sup>68</sup> Updated and estimated from data received from USCIS, numbers through FY 2017; *Mandatory H-1B Visa Fees Exceed \$3 Billion in Past Decade*, NFAP Policy Brief, National Foundation for American Policy, March 2011. See also *U.S. Businesses Pay Over \$91 Billion a Year to Support Education*, NFAP Policy Brief, National Foundation for American Policy, May 2007.

<sup>69</sup> National Science Foundation, Survey of Graduate Students and Postdoctorates in Science and Engineering, <https://ncesdata.nsf.gov/webcaspar/>. U.S. students include lawful permanent residents. If one includes part-time students, 67 percent of graduate students in electrical engineering and 57 percent in computer science are international students.

<sup>70</sup> Giovanni Peri, Kevin Shih and Chad Sparber, “STEM workers, H-1B Visas and Productivity in U.S. Cities,” January 29, 2013.

## ABOUT THE AUTHOR

Stuart Anderson is Executive Director of the National Foundation for American Policy, a non-profit, non-partisan public policy research organization in Arlington, Va. Stuart served as Executive Associate Commissioner for Policy and Planning and Counselor to the Commissioner at the Immigration and Naturalization Service from August 2001 to January 2003. He spent four and a half years on Capitol Hill on the Senate Immigration Subcommittee, first for Senator Spencer Abraham and then as Staff Director of the subcommittee for Senator Sam Brownback. Prior to that, Stuart was Director of Trade and Immigration Studies at the Cato Institute in Washington, D.C., where he produced reports on the military contributions of immigrants and the role of immigrants in high technology. He has an M.A. from Georgetown University and a B.A. in Political Science from Drew University. Stuart has published articles in the *Wall Street Journal*, *New York Times*, *Los Angeles Times*, and other publications. He is the author of the book *Immigration* (Greenwood, 2010).

## ABOUT THE NATIONAL FOUNDATION FOR AMERICAN POLICY

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