

**THE MOST MISLEADING STATISTIC IN IMMIGRATION:  
EXAMINING CLAIMS ABOUT JOBS FOR SCIENCE AND  
ENGINEERING DEGREE HOLDERS**

**EXECUTIVE SUMMARY**

A narrow government definition of STEM (science, technology, engineering and math) “occupations,” and not foreign nationals, explains how critics can assert science and engineering degree holders are not doing well in the U.S. job market, despite ample evidence to the contrary. In short, the allegation that immigrants are harming natives relies on *not counting 11 to 12 million people* gainfully employed at jobs in the U.S. economy that use their bachelor’s level expertise (or higher) in science or engineering.

Senator Jeff Sessions (R-AL), a leading immigration critic, is the chief individual responsible for spreading the false notion that virtually no jobs exist for Americans in science and engineering. Senator Sessions has stated that millions of Americans with STEM qualifications “lack STEM employment” and are being harmed by immigrants and temporary visa holders. But he and other critics make this assertion by counting only individuals employed in STEM “occupations,” which is a narrow government classification that excludes millions of people working in jobs that utilize their science and engineering (S&E) education.

As the National Science Foundation’s *Science and Engineering Indicators 2014* explains: “The application of S&E knowledge and skills is widespread across the U.S. economy and not just limited to S&E occupations. The number of college-educated individuals reporting that their jobs require at least a bachelor’s degree level of technical expertise in one or more S&E fields (16.5 million) is significantly higher than the number in occupations with formal S&E titles (5.4 million).” An April 2015 National Science Foundation report updated these figures to show that *12 million people* who require at least a bachelor’s degree level of technical expertise in one or more S&E fields are not included in the formal definition of a science and engineering “occupation” (the definition Senator Sessions uses).

Table 1 illustrates how using realistic employment measures allows for a more accurate picture of the job market for science and engineering degree holders. Between 2003 and 2010, the number of jobs requiring science and engineering technical expertise at a bachelor’s level increased by 3.6 million (or 28 percent), much higher than the 470,000 if one counted only STEM “occupations,” according to the National Science Foundation.

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**Table 1**  
**Increase in Employment 2003 to 2010: S&E Occupations vs. Employed in Jobs Requiring S&E Bachelor’s Level Expertise**

Increase in Employment in S&E “Occupations” (2003 to 2010)	Increase in Employment in Jobs Requiring S&E Technical Expertise at Bachelor’s Level in One or More S&E Fields (2003 to 2010)
+470,000 (+9.5 percent)	+3,605,000 (+28 percent)

Source: National Science Foundation, *Science and Engineering Indicators 2014*, Table 3-3 and *Science and Engineering Indicators 2006*, Table 3-1.

Other findings dispute the notion that immigrants or temporary visa holders have harmed the job prospects of individuals with science and engineering degrees in America:

- Only 1.4 percent of individuals who received a master’s degree within the previous 5 years (as of 2010) in computer and mathematical sciences reported being involuntarily out of their field – disputing the notion that almost no one with degrees in STEM fields are actually working in their field.
- Only 3 percent of individuals who received a master’s degree within the previous 5 years (as of 2010) in engineering reported being involuntarily out of their field, according to the National Science Foundation.
- Only 5 percent of individuals with a degree in either engineering or computer and mathematical sciences were working involuntarily out of their field in 2010 (the most recent year available), according to the National Science Foundation.
- No correlation exists between the percent of science and engineering (S&E) degree holders involuntarily out of their field and the prevalence of H-1B visa holders in a particular occupational category. Individuals who received a master’s degree in the previous 5 years in the social sciences were *more than 4 times as likely* to be involuntarily out of their field as individuals with a master’s degree in computer or mathematical sciences – 6.3 percent vs. 1.4 percent (2010 data). Almost half of H-1B visa holders fill computer-related jobs and relatively few H-1Bs are employed in the social sciences.
- Using the narrow government definition of STEM “occupation” favored by critics would likely exclude every American recipient of the Nobel Prize in the past 100 years who worked as a professor, which would be classified as a postsecondary teacher using Census data, and the CEO of Apple, since management positions typically do not count as a STEM occupation under government classifications. Managers and individuals who are promoted to jobs overseeing other workers can become excluded from the federal government’s definition of working in a STEM “occupation.”

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- It makes no sense to argue that an increase in H-1B visas, such as the approximately 50,000 to 130,000 contemplated in the I-Squared Act, would “provide a large enough labor supply to allow tech companies to fill 100 percent of available job openings with foreign workers,” as asserted by Senator Sessions and a witness at a recent Senate hearing. This zero-sum view ignores that The Conference Board recently reported almost 600,000 advertised vacancies just in “computer and mathematical science” occupations. Moreover, elected officials and academics have limited ability to predict the number of jobs that will be created in the future in the U.S. economy.
- In January 2015, there were more than 5 vacancies advertised online for every 1 unemployed person in a “computer and mathematical science” occupation, according to The Conference Board: 599,800 total ads and 107,200 unemployed, the best supply/demand ratio of any occupational category in America.

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*The Most Misleading Statistic in Immigration***BACKGROUND**

Question: What is the most misleading statistic in immigration? Answer: Anything related to STEM occupations. In recent years, those who want to prevent U.S. companies from hiring high-skilled foreign nationals inside the United States have cited statistics that utilize a very narrow definition of working in science, technology, engineering and math (STEM). The aim has been to create an impression that few Americans with technical degrees are employed in jobs related to their fields of study – and that immigrants are to blame. Such critics are not only incorrect but have been assisted by federal government classifications that obscure rather than illuminate.

In criticizing high technology companies, Senator Jeff Sessions, chair of the Senate Judiciary's immigration subcommittee, has stated, "Recent data from the Census Bureau confirmed that a stunning 3 in 4 Americans with a STEM degree do not hold a job in a STEM field – that's a pool of more than 11 million Americans with STEM qualifications *who lack STEM employment*. This is a constantly growing number: Rutgers Professor Hal Salzman, a top national expert on STEM labor markets, estimates that 'U.S. colleges produce twice the number of STEM graduates annually as find jobs in those fields.'"<sup>1</sup>

*Science and Engineering Indicators 2014*, a document produced every two years by the National Science Foundation, explains why such statistics present a wholly inaccurate and misleading portrait of the labor market outcomes of those with degrees in science and engineering fields, particularly the assertions by Sen. Sessions and others about a dire employment situation.<sup>2</sup> Census uses a narrow definition of STEM occupations that excludes millions of people who report using their STEM degree at a bachelor's level or higher in their jobs.

If the critics were correct, then a fair reading of the data would show that the vast majority of Americans with degrees in science and engineering fields, particularly in fields with a high proportion of foreign nationals, are: 1) involuntarily out of their field of study and 2) do not secure employment that is related to their field of study. Senator Sessions

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<sup>1</sup> Senator Jeff Sessions, *Immigration Handbook for the New Republican Majority, A Memo for Republican Members from Sen. Jeff Sessions*, January 2015. Emphasis added. Senator Sessions arrives at the 11 million figure by accepting the Census Bureau's number of 5.1 million people employed in a STEM occupation. That number comes from an Excel spreadsheet associated with the news release "Census Bureau Reports Majority of STEM College Graduates Do Not Work in STEM Occupations," U.S. Census Bureau, July 10, 2014. In the Excel spreadsheet, the U.S. Census Bureau reports 5,171,415 individuals with a bachelor's degree or higher, aged 25 to 64, working in a "STEM Occupation." (2012 data) The 11 million figure is derived by accepting the Census Bureau's figure that there are only 5.1 million people with a bachelor's degree working in a STEM occupation and only 3.8 million of the 5.1 million have a STEM bachelor's degree. The Census Bureau states there are 14.8 million people with a bachelor's degree in a STEM field. The figure of 11 million people with a STEM degree who "do not work in STEM occupations" comes from subtracting 14.8 million from 3.8 million. In *Science and Engineering Indicators 2014*, the National Science Foundation reports a Census number of 5,756,000 individuals employed in STEM occupations at "all education levels" for 2011. The 2012 Census figure of 5,171,415 in a STEM occupation is lower because it only includes individuals with at least a bachelor's degree.

<sup>2</sup> *Science and Engineering Indicators 2014*, National Science Foundation, 2014.

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uses the term “STEM employment” and more careful critics use the term “STEM occupations.” Either way, the reality is completely different from what the critics suggest.

**THE REALITY: INDIVIDUALS WITH STEM DEGREES PERFORM WELL IN THE LABOR MARKET, PARTICULARLY WHEN COMPARED TO FIELDS WITH FEWER FOREIGN NATIONALS**

- 1) **Only 5 percent of individuals with degrees in computer and mathematical sciences are working involuntarily outside of their field; and only 1.4 percent of those with recent master’s degrees in those areas are working involuntarily outside of their field.**

Critics imply that the vast majority of Americans with degrees in science, technology, engineering and math (STEM) have been pushed out of potential jobs in their fields and have been forced to take low-wage jobs or become unemployed. The data show this assertion bears no relationship to reality.

*Only 5 percent* of individuals with a degree in either engineering or computer and mathematical sciences were working involuntarily out of their field in 2010 (the most recent year available), according to the National Science Foundation.<sup>3</sup> This (low) percentage of individuals with degrees in engineering or computer and mathematical sciences involuntarily working out of their field has stayed low from 1993 through 2010, fluctuating within a range of 2.7 to 4.9 percent for those with engineering degrees and a range of 2.9 to 5.3 percent in math and computer science.

**Table 2  
Involuntarily Out of Field  
Master’s Degree in Computer and Mathematical Sciences in Previous 5 Years**

<b>Master’s Degree (Field)</b>	<b>Percent Involuntarily Out of Field (2010)</b>
<b>Computer and Mathematical Sciences</b>	1.4 percent

Source: National Science Foundation.

Moreover, only 1.4 percent of individuals who received a master’s degree within the previous 5 years (as of 2010) in computer and mathematical sciences reported being involuntarily out of their field, according to the National Science Foundation – a far cry from the assertion that almost no one with degrees in STEM fields are actually working in their field.<sup>4</sup> The master’s degree data are significant in that most H-1B visa

<sup>3</sup> Ibid., p. 3-31, Table 3-13. According to NSF, “The involuntarily out-of-field rate is the proportion of all employed individuals who report that their job is not related to their field of highest degree because a job in their highest degree field was not available.”

<sup>4</sup> Ibid., Table 3-16.

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holders (53 percent) have a master’s degree or higher and nearly half of H-1B petitions are used by individuals to work in computer-related fields, according to U.S. Citizenship and Immigration Services.<sup>5</sup> Only 3 percent of individuals who received a master’s degree within the previous 5 years (as of 2010) in engineering reported being involuntarily out of their field, according to the National Science Foundation.<sup>6</sup>

**Table 3  
Involuntarily Out of Field: Master’s Degree in Social Sciences or Computer and Mathematical Sciences in Previous 5 Years**

Master’s Degree (Field)	Percent Involuntarily Out of Field (2010)	Percent of H-1B Petitions in the Occupational Category (FY 2010)
<b>Computer and Mathematical Sciences</b>	1.4 percent	47.5 percent
<b>Social Sciences</b>	6.3 percent	2.1 percent

Source: National Science Foundation; U.S. Citizenship and Immigration Services.

**2) Individuals with degrees in computer science/math and engineering are much less likely to be working involuntarily outside their field than individuals with degrees in fields with relatively few H-1B visa holders, including the social sciences and biological, agricultural and environmental sciences.**

No correlation exists between the percent of science and engineering (S&E) degree holders involuntarily out of their field and the percent of overall H-1B petitions in a particular Occupational Category, such as computers. In fact, to the extent the data show anything, the opposite of what critics contend is the case: individuals in occupational categories with more H-1Bs, such as engineering and computer and mathematical sciences, are far *less likely* to be involuntarily out of their field than fields like social sciences and biological, agricultural and environmental sciences that employ comparatively few H-1B visa holders.

While immigration critics imply anyone who does not obtain work in their field should blame immigrants and temporary visa holders, in fact, individuals in fields in which relatively few foreign-born enter the United States to work are far more likely to report being involuntarily out of their field. Individuals who received a master’s degree in the previous 5 years in the social sciences were *more than 4 times as likely* to be involuntarily out of their field as individuals with a master’s degree in computer or mathematical sciences –

<sup>5</sup> *Characteristics of H-1B Specialty Occupation Workers Fiscal Year 2012 Report to Congress*, U.S. Citizenship and Immigration Services, 2013.

<sup>6</sup> *Science and Engineering Indicators 2014*, Table 3-16.

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6.3 percent vs. 1.4 percent (2010 data). And whereas 47.5 percent of the H-1B petitions approved in FY 2010 were in computer-related fields only 2 percent of such petitions were in social sciences.<sup>7</sup>

**Table 4**  
**Percent Involuntarily Out of Field (by S&E Degree)**

HIGHEST DEGREE IN SCIENCE & ENGINEERING	Percent Involuntarily Out of Field (2010)	Occupational Category as a Percentage of All H-1B Petitions in FY 2010
<b>Social Sciences</b>	11.3 percent	2.1 percent
<b>Biological, Agricultural and Environmental Life Sciences</b>	10.1 percent	2.7 percent
<b>Physical Sciences</b>	8.2 percent	2.3 percent
<b>Computer and Mathematical Sciences</b>	5.1 percent	47.5 percent
<b>Engineering</b>	4.9 percent	7.7 percent

Source: National Science Foundation; *Characteristics of H-1B Specialty Occupation Workers Fiscal Year 2010 Report to Congress*, U.S. Citizenship and Immigration Services, April 4, 2011.

Looking more broadly at individuals with science and engineering degrees, in social sciences, 11.3 percent of individuals were involuntarily out of their field compared to only 5.1 percent in computer and mathematical sciences in 2010. And only about 2 percent of H-1B petitions in FY 2010 were in the social sciences compared to almost half of all H-1B petitions (47.5 percent) in that year.<sup>8</sup> (See Table 4.)

**3) Narrow government definitions for job classifications, not foreign nationals, explain the assertion that people with STEM degrees are not doing well.**

The 2014 Nobel Prize winner for chemistry, Stanford University chemistry professor W.E. Moerner, would be surprised to learn from immigration critics that he is yet another example of a native-born American who lacks employment in a STEM job and, therefore, is doing poorly because of U.S. immigration policies. That is because as a professor his job is classified as a postsecondary teacher, not as a STEM occupation, under the federal government's Standard Occupational Classification (SOC).<sup>9</sup> In fact, using the narrow government definition favored by immigration critics every American recipient of Nobel Prize in physics,

<sup>7</sup> National Science Foundation; *Characteristics of H-1B Specialty Occupation Workers Fiscal Year 2010 Report to Congress*, U.S. Citizenship and Immigration Services, April 4, 2011.

<sup>8</sup> Ibid. *Science and Engineering Indicators 2014* reports that the better outcomes for computer/math sciences and engineering graduates holds true even if one confines the data to only individuals within 5 years of receiving a degree and considers only those with bachelor's degrees: among individuals with a bachelor's degree in social sciences, 18 percent were involuntarily out of their field in 2010, compared to 10.6 percent among individuals with a bachelor's degree in computer and mathematical sciences and 4.1 percent in engineering.

<sup>9</sup> <http://www.bls.gov/soc/>. The National Science Foundation is the exception that includes certain postsecondary teachers in S&E occupations.

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chemistry or medicine who has worked as a professor (or even as a physician) over the past 100 years would likely be listed as working outside of STEM employment.

Tim Cook, CEO of Apple, is another individual who fits into Senator Sessions’ definition of an American with a degree in a STEM field who “lacks STEM employment.” Mr. Cook has a degree in industrial engineering but CEOs and management jobs in general typically do not count as a STEM occupation under government classifications. Ironically, using the narrow definition of STEM occupations means when an individual is promoted to oversee other workers, he or she is no longer employed in a STEM “occupation” and, according to immigration critics, now “lacks STEM employment.” In other words, positive outcomes for individuals in the labor market get classified in a way that critics later use to paint a negative picture.

The definition of a “STEM occupation” is so narrow as to be useless for the purpose utilized by immigration critics. In fact, by using the narrow definition of “STEM occupation” critics miss or exclude over 11 million people working in STEM-related jobs. The National Science Foundation calls counting only those working in S&E “occupations” a “relatively narrow definition of the S&E workforce.”<sup>10</sup>

**Table 5  
S&E Occupation vs. Employed in Job Requiring S&E Bachelor’s Level Expertise (2010)**

<b>Employed in S&amp;E “Occupation”</b>	<b>Employed in Jobs Requiring S&amp;E Technical Expertise at Bachelor’s Level in One or More S&amp;E Fields</b>
5.4 million	16.5 million

Source: National Science Foundation, Science and Engineering Indicators 2014, Table 3-3.

The National Science Foundation explains why it is misleading to count only individuals employed in STEM “occupations”: “The application of S&E knowledge and skills is widespread across the U.S. economy and not just limited to S&E occupations. The number of college-educated individuals reporting that their jobs require at least a bachelor’s degree level of technical expertise in one or more S&E fields (16.5 million) is significantly higher than the number in occupations with formal S&E titles (5.4 million).”<sup>11</sup>

In case anyone missed it the first three times it is mentioned in the report, *Science and Engineering Indicators 2014* reiterates that it is inappropriate to count only jobs formally classified as being in an S&E occupation: “The extensive use of S&E expertise in the workplace is also evident from the number of college graduates who indicate that their jobs require technical expertise at the bachelor’s degree level in S&E fields. According to the 2010 National Survey of College Graduates (NSCG), 16.5 million college graduates

<sup>10</sup> *Science and Engineering Indicators 2014*, p. 3-10.

<sup>11</sup> *Ibid.*, p. 3-5.



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reported that their jobs require at least this level of technical expertise in one or more S&E fields. This figure is much higher than the estimated number of college graduates employed in S&E occupations (5.4 million).<sup>12</sup>

Utilizing updated data, an April 2015 National Science Foundation report again pointed out how misleading it is to count only the approximately 6 million professionals the government formally classifies as employed in an “S&E occupation” and act as if the other 12 million people “whose jobs required at least a bachelor’s degree level of technical expertise in one or more S&E fields” do not exist. The National Science Foundation reports, “The extensive use of S&E expertise in the workplace is also evident from the 18 million college graduates reporting in 2013 that their jobs required at least a bachelor’s degree level of technical expertise in one or more S&E fields. This number is about three times as large as the number of college graduates employed in an S&E occupation in 2013 (6 million).”<sup>13</sup>

The use of a narrow definition of science and engineering employment as a way to argue for restricting immigration appears to have started with a 2007 Urban Institute report by Lindsay Lowell and Hal Salzman.<sup>14</sup> In that report, they wrote, “The overall S&E workforce totals about 4.8 million . . .”<sup>15</sup> At the time, based on data available from the National Science Foundation, this would have undercounted or left out approximately 8 million additional individuals who reported “they needed at least a bachelor’s degree level of knowledge in S&E fields in their jobs.”<sup>16</sup> This more narrow number was also alluded to in a 2013 report and has been picked up by other immigration critics.<sup>17</sup>

**4) The number of jobs requiring science and engineering technical expertise at a bachelor’s level increased by 3.6 million (or 28 percent) between 2003 and 2010, far higher than the 470,000 if one counted only STEM “occupations.”**

It is when calculating jobs that one finds perhaps the best example of how the narrow definition of STEM “occupations” misleads, rather than illuminates. The number of jobs requiring technical expertise at a bachelor’s level in one or more science and engineering fields grew by 3.6 million (or 28 percent) between

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<sup>12</sup> *Ibid.*, p. 3-11.

<sup>13</sup> John Finamore and Beethika Khan, “Characteristics of the College-Educated Population and the Science and Engineering Workforce in the United States,” InfoBrief, National Science Foundation, National Center for Science and Engineering Statistics, NSF 15-317, April 2015.

<sup>14</sup> B. Lindsay Lowell and Hal Salzman, *Into the Eye of the Storm: Assessing the Evidence on Science and Engineering Education, Quality, and Workforce Demand*, The Urban Institute, October 2007, p. 30.

<sup>15</sup> *Ibid.*

<sup>16</sup> *Science and Engineering Indicators 2008*, The National Science Foundation, 2008, Chapter 3.

<sup>17</sup> Hal Salzman, Daniel Kuehn, and B. Lindsay Lowell, *Guestworkers in the High-Skill U.S. Labor Market*, EPI Briefing Paper, Economic Policy Institute, April 24, 2013.

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2003 and 2010, according to the National Science Foundation.<sup>18</sup> (See Table 1.) But if one used only the definition of STEM “occupations,” then the increase of jobs was 470,000 (a 9.5 percent increase). Critics of immigration generally use only this second smaller number, then compare it to the number of recent graduates in science and engineering fields, and declare America has more than enough – or even too many – individuals with science and engineering degrees.

5) **Science and Engineering skills are in demand in the U.S. labor market.**

A recent report of The Conference Board belies claims that the tech job market is in terrible shape and immigrants are to blame. In fact, the data show demand for Americans in “computer and mathematical science” occupations is greater than in any other field and there are currently almost 600,000 advertised vacancies.<sup>19</sup>

In the report, The Conference Board revealed that in January 2015, there were more than 5 vacancies advertised online for every 1 unemployed person in a “computer and mathematical science” occupation: 599,800 total ads and 107,200 unemployed. Over the past year, the number of online ads for “computer and mathematical science” jobs increased by 12 percent from February 2014 to February 2015, from 536,100 to 599,800, indicating increased demand.<sup>20</sup>

“Computer and mathematical science” has the best “supply/demand rate” (0.18) of any occupational category in America. The supply/demand rate measures the number of unemployed persons divided by the number of total online ads. When the ratio falls below 1.0, it indicates there are more jobs advertised than people unemployed. A ratio of more than 1.0 means there are more unemployed people than jobs advertised. In fact, the overall supply/demand rate for all occupations is 9 times higher (or worse) at 1.70 than the 0.18 rate for “computer and mathematical science.” “Architecture and engineering” also has a strong supply/demand rate at 0.68.<sup>21</sup>

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>22</sup>

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<sup>18</sup> National Science Foundation, Table 3-3 in *Science and Engineering Indicators 2014* and Table 3-1 in *Science and Engineering Indicators 2006*.

<sup>19</sup> “Online Labor Demand Increased 184,100 in February,” News Release, The Conference Board, March 4, 2015. Also, adapted from Stuart Anderson, “Tech Job Market Is Strong,” *Forbes*, March 16, 2015.

<sup>20</sup> *Ibid.*

<sup>21</sup> *Ibid.*

<sup>22</sup> Interview with human resources professional via email at a technology company.

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In a labor force the size of America's, with over 157 million people, there is always going to be some level of unemployment, due to a combination of frictional unemployment (people switching jobs in search of better opportunities) and mismatches between individual skills and geographic location vs. the skills demanded in particular locations.

Some have argued that “average” salaries in science and engineering have not increased rapidly so that means companies are not having trouble finding workers with tech skills. The Conference Board data refute that notion.

Using changes in “average” wages as an employment indicator can be problematic. For example, when a field, such as high tech, is adding workers, it tends to add newer workers who earn less than experienced workers, which brings down the average wage. And the opposite can also be true, when newer workers are the first to lose jobs in a declining sector it can raise the average wage. Also, when the highest paying workers in an occupation are promoted to managerial positions, their wages may no longer get averaged with others in science and engineering, but become classified as “management.” Finally, domestic wages in a country can be affected by similar or related work being done by individuals in other countries around the world.

To show how uninformative average wages can be as an indicator of the health of a sector consider what happened in construction during the recent recession: According to the Bureau of Labor Statistics, between 2007 and 2012, the number of people employed in “construction and extraction occupations” dropped by over 3 million (from 6.7 million to 3.5 million), while the “mean annual wage” actually increased by over 10 percent (over \$4,000).<sup>23</sup>

Nevertheless, it is worth noting that the average hourly wage reported by The Conference Board for computer and mathematical science was \$39.43 – higher than every other occupation group except management and law. That shows computer skills are highly valued, regardless of how the average skill or experience level of the computer workforce may have changed.

Table 6 also shows that salaries for those who earned their degrees within the past 5 years in engineering and computer & mathematical sciences are much higher than for those in fields outside of science and engineering or in the physical sciences, social sciences or life sciences.<sup>24</sup> The evidence is clear that recent

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<sup>23</sup> Bureau of Labor Statistics.

<sup>24</sup> National Science Foundation National Survey of College Graduates 2010.

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graduates generally experience higher salaries in engineering and computer science, which undermines the argument that the existence of H-1B visa holders encourages U.S. students to pursue degrees in other fields.

**Table 6**  
**Median Salary for Graduates 1-5 Years After Degree (2010)**

<b>Degree</b>	<b>Bachelor's</b>	<b>Master's</b>	<b>Doctorate</b>
<b>Computer &amp; Mathematical Sciences</b>	\$55,000	\$74,900	\$85,000
<b>Engineering</b>	\$60,000	\$74,000	\$82,000
<b>Physical Sciences</b>	\$40,000	\$42,500	\$55,000
<b>Social Sciences</b>	\$36,000	\$50,000	\$67,000
<b>Life Sciences</b>	\$35,000	\$40,000	\$50,000
<b>Non S&amp;E Degree Fields</b>	\$38,000	\$53,125	\$72,500

Source: National Science Foundation National Survey of College Graduates 2010.

Often the two sides of the high-skilled immigration debate have argued over whether a “shortage” exists of workers in high tech fields. But even if companies are having difficulty finding desirable employees a “labor shortage” may never show up in government data. As an NFAP report on the shortcomings of a “commission” to set immigration levels pointed out, “A key reason a ‘labor shortage’ may not show up in any government data is that employers take creative action to address an inability to hire people they need. For example, in the technology field, if companies cannot find the individuals they need in the United States they can send the work to be done in another country or hire people and place them outside the U.S. A commission would continually determine no “certified labor shortage” exists because companies have made the decision to expand abroad rather than in America due to restrictive visa policies.”<sup>25</sup>

The report noted this problem exists at the lower end of the job spectrum as well. “At the lower end, one reason it is difficult to document a labor shortage in agricultural workers is that analyses do not distinguish between legal and illegal workers. Most farm workers are here illegally, according to the Department of Labor. Therefore, a commission would likely conclude there is no need for a better visa system for agricultural workers because it cannot document a shortage, creating a situation that encourages even more illegal immigration.”<sup>26</sup>

<sup>25</sup> *A Commission to Regulate Immigration? A Bad Idea Whose Time Should Not Come*, NFAP Policy Brief, National Foundation for American Policy, May 2009.

<sup>26</sup> *Ibid.*

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The question is less whether there exists a “shortage” that may be difficult or impossible to measure given the global economy and the option of employers choosing not to expand in the United States. More than 70 percent of recent graduate students in electrical engineering and 65 percent in computer science are international students. The issue is more whether it is wise policy to deny opportunity to people whose skills are desired and may even have been educated – but not born – in the United States. And is it wise policy to encourage less investment and job creation inside the United States, rather than abroad, since employers can find ways to work around difficulties presented by restrictive U.S. laws? Even some U.S. farmers have dealt with the difficulty of finding workers by leasing farm land in Mexico and hiring Mexicans in that country, another type of “work around” that would not show up in government data.

The market for labor today is global, which is never really addressed by critics of immigration. There is obviously a global market for high-skilled work – websites even exist to pay individuals to work on technology-related projects anywhere in the world. Moreover, many employers have established facilities overseas whose primary purpose is to serve overseas markets. But the size of the facilities and the amount invested in them is influenced by U.S. tax and immigration law. It makes little sense to act like the world ends at U.S. borders and that no competition exists for capital and labor around the globe – or that U.S. workers can be immunized from global competition through immigration restrictions.

## CONCLUSION

Those presenting a gloomy picture of the job market for U.S. professionals and using data on science and engineering “occupations” that mislead people into thinking there are no jobs available do so in hopes of preventing an increase in the quotas for H-1B visa holders. The data and arguments are not being presented purely for academic purposes.

At a recent Senate hearing both Senator Sessions and a witness (Rutgers Professor Hal Salzman) argued that an increase in H-1B visas contemplated in the I-Squared Act (S. 153) – approximately 50,000 to 130,000 over time based on a formula – would “provide a large enough labor supply to allow tech companies to fill 100 percent of available job openings with foreign workers.”<sup>27</sup> It makes little sense to pretend to know with precision how many jobs there will be in the U.S. economy in a certain sector at some point in the future. It looks particularly bad when the prediction is not even accurate in the present, since The Conference Board recently reported almost 600,000 advertised vacancies just in “computer and mathematical science” occupations.<sup>28</sup>

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<sup>27</sup> Senator Sessions repeated these figures in “Sessions Summarizes Academic Findings from Hearing on Corporate Abuse of Guest Worker Programs,” News Release, Senator Jeff Sessions, March 17, 2015. In S. 153, the first year the annual H-1B limit would be 115,000 but then could increase based on usage. The bill would also expand the exemption from the annual limit for individuals with a master’s degree or higher from a U.S. university.

<sup>28</sup> “Online Labor Demand Increased 184,100 in February.”

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*The Most Misleading Statistic in Immigration*

Despite assertions to the contrary, the sky has not fallen down upon individuals with degrees in high technology fields and, in fact, many are doing quite well. “For recruiters trying to hire software whizzes, the odds are poor,” reported *The Economist*. “A recovering economy in America and an explosion of entrepreneurial activity are driving up demand for tech talent. According to the Bureau of Labor Statistics, the unemployment rate among software developers and engineers was just 2.5% in the fourth quarter of 2014, compared with a national joblessness rate of 5.7%. A global search engine for jobs, Indeed, tracks the ten hardest positions to fill; in the final three months of last year, seven of these were roles related to computer science.”<sup>29</sup>

Using statistics to make a point can be beneficial, allowing a policy debate to move beyond anecdotes. However, those statistics should bear some relationship to reality. Arguments about the dire straits of individuals with science and engineering degrees who are not working in narrowly defined “STEM occupations” fail that test.

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<sup>29</sup> “How to Bag a Geek,” *The Economist*, February 21, 2015.

## APPENDIX

### COMPUTER SCIENCE DEGREE HOLDERS

If one looks at computer science degree holders working in the United States, only 5 percent are employed in non-management jobs unrelated to computer science, according to the National Science Foundation Survey of College Graduates (2010).<sup>30</sup> Approximately 62 percent are employed in a computer science occupation or other science and engineering occupation. Immigration critics typically stop there and imply the other 38 percent have been forced to take bad jobs and blame it on foreign nationals. However, that is not the case.

Of the remaining 38 percent, about 15 percent of computer science degree holders work in jobs directly related to computers or science-oriented but classified by the U.S. government as non-Science and Engineering occupations. Examples of such jobs include computer and information systems manager, engineering manager, postsecondary and secondary teachers of computers, math or science and engineering and science technicians. Another 12 percent are in management occupations that, because they are management positions, are not classified by the U.S. government as being in a STEM occupation. Another 6 percent work in occupations computer science degree holders report as related or closely related to their degree. That leaves only about 5 percent employed in jobs that are neither in management nor related to their computer science degree.

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<sup>30</sup> National Science Foundation Survey of College Graduates 2010. All with highest degree in computer science employed fulltime in any occupation and under age 76. The data in the Appendix refer to the survey.

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