H-1Bs: How Do They Stack Up to US Born Workers?

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ABSTRACT

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Combining unique individual level H-1B data from U.S. Citizenship and Immigration Services (USCIS) and data from the 2009 American Community Survey, we analyze earnings differences between H-1B visa holders and US born workers in STEM occupations. The data indicate that H-1Bs are younger and more skilled, as measured by education, than US born workers in the same occupations. We fail to find support for the notion that H-1Bs are paid less that observationally similar US born workers; in fact, they appear to have higher earnings in some key STEM occupations, including information technology.

JEL Classification: J8, J15, J18, J31, J61

Keywords: temporary workers, H-1B, immigration, high-skill, STEM

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1. Introduction

There are a number of temporary visa programs currently in place in the US. The largest and arguably most important is the H-1B program which allows US businesses to temporarily employ high-skilled foreign workers in key specialty occupations generally requiring at least a bachelor's degree. Other temporary programs attracting high-skilled workers include those for intracompany transferees (L1), persons with extraordinary ability (O1) and skilled workers from the other NAFTA countries (TN). Although not without their critics, these programs are generally less controversial than the H-1B program and have not been under close scrutiny of policy makers. Two key concerns with the program are whether H-1B visa recipients are in fact highly skilled and whether they are underpaid relative to US born workers. A recent Government Accountability Office report (GAO, 2011) suggested that the majority of H-1B workers are employed in entry level positions, leading the Judiciary Committee Chairman Lamar Smith in a March 2011 Subcommittee on Immigration Policy and Enforcement Hearing on the H-1B program to raise the question "Are all these entry level workers really the 'best and brightest'?"

The H-1B program is intended to increase the flexibility of immigration policy and the ability of firm hiring to respond to changes in economic conditions. The program aims to allow firms to fill high-skilled positions otherwise left unfilled, particularly in the Science, Technology, Engineering and Mathematics (STEM) industries, and to thereby enhance economic growth and innovation. However the program has been criticized for having a negative impact on native workers, interfering with the efficiency of labor markets by limiting the mobility of the workers granted such visas, and providing employers an opportunity to exploit immigrant workers. Proponents of the H-1B program do not agree with these criticisms and instead argue

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that they face a shortage of workers and that, without well-functioning temporary worker programs, efforts to innovate and expand domestically are hampered.

The presence of labor shortages in key high-skilled occupations, particularly in information and technology, has been challenged (e.g. Matloff, 2003 and Miano, 2008). Also called into doubt is the skill level of H-1B workers – Matloff (2008) boldly states that these workers are not "the best and the brightest," a conclusion with which Hira (2007) concurs. The primary evidence of these contentions has been lower wages among H-1B workers compared to US born workers. Low wages among H-1B workers raise the concern that it is not the competitiveness of the US economy that motivates the existence of the program but instead firm profitability stemming from the opportunity to hire foreign workers at below market compensation. Additionally, comparatively low skill levels, as argued by Matloff (2008), suggest that H-1B workers may not be the innovators policymakers intended to attract. More recent evidence, however, indicates that foreign born information technology professionals on temporary visas are not paid less and are in fact earning a salary premium compared to observationally similar native workers (Hunt, 2011 and Mithas and Lucas, 2010).

Existing studies of the skill level and wages of H-1B workers provide conflicting results. A plausible reason for this is the limited availability of suitable individual level data.[1] The studies by Miano (2008) and Matloff (2008) rely on data lacking information on key earnings determinants such as age and education of the worker. The survey data used by Mithas and Lucas (2010) provides this information but also includes other temporary workers in other large

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[1] The accuracy concerns also hold for the above mentioned GAO (2011) report suggesting that more than half of H-1B workers are used to fill entry level positions. The statistics rely on data from the initial employer application, known as the Labor Condition Application (LCA). However, these data do not reflect the skills and background of any particular worker as it is not an application for a visa but is simply the required first step of the so-called attestation process for an employer seeking to hire H-1B workers. See GAO (2011) for a description of the H-1B approval process.

temporary worker visa programs. The sample of temporary workers in the survey used is also relatively small: about 200 temporary workers per year. Importantly, all of these studies are restricted to information technology professionals. Hunt's (2011) broader and very informative study includes a substantially larger sample of high-skilled workers who entered on a temporary work visa but it is restricted to individuals who have been in the US more than three years and hence excludes all individuals who did not renew their visa. This has the further implication that wage comparisons do not speak to differences in compensation of temporary workers when they first arrive in the US, which is the focus of the policy concerns raised by Miano (2008) and Matloff (2008). Furthermore, like Mithas and Lucas (2010), H-1Bs are not separately identified in Hunt (2011) and hence high-skilled temporary workers are aggregated into one category. This may be of importance since although the H-1B program is the largest of the high-skilled temporary visa programs, O and L visas represent a substantial share in recent years (for example, there were 110,369 new H-1B visas issued in 2009, compared with 64,696 L1 and 9,368 new O1 visas issued in the same year). These workers may have different educational and skill backgrounds than H-1Bs and hence contribute and perform differently in the US labor market.

This paper builds on the existing literature on the skills and performance of high-skilled temporary workers in the US by providing the first analysis of unique individual level data on all workers who obtained an H-1B visa (either new or continuing) in 2009. The data were obtained from the US Citizenship and Immigration Services (USCIS) through a Freedom of Information Act (FOIA) request and contain key information such as occupation, industry, educational attainment, age, country of origin and annual earnings.[2] To assess H-1B worker skill and earnings we also generate a sample of high-skilled US born workers from the American

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[2] These are administrative data from the I-129 Form, "Petition for a Nonimmigrant Worker."

Community Survey (ACS). We perform our analysis not only for workers in information

technology but also in other key STEM occupations: engineering, math and sciences, health and

post-secondary education. Together, these occupations represented close to ¾ of all H-1Bs

issued in 2009. The data are also unique in that they are the only data that allow for an

examination of earnings separately for new and continuing H-1B visa holders. As with all data,

ours have some limitations that we aim to address in the analysis provided.

2. The H-1B Temporary Visa Program – Background and History

The H-1 temporary worker visa was established in 1952 as part of the Immigration and

Nationality Act. The H-1 visa allowed workers "of distinguished merit and ability" to fill

temporary positions.[3] Initially, the program had no caps or explicit provisions to protect U.S.

workers, but it required that both the worker *and* the job be temporary – this requirement was

eliminated in 1970 but remains a feature of some other temporary work visas.

The 1990 Immigration Act split the H-1 program into two different types of visas. The

H-1A was designated specifically to bring foreign-educated nurses in to fill a nursing shortage in

the US and later expired in 1995. The H-1B visa was originally for all non-nursing skilled

occupations, but its designation was adjusted to those working in a "specialty occupation,"

specifically, one requiring at least a Bachelor's degree and full licensing, if applicable, in the

relevant field.

The H-1B visa is valid for three years and is renewable once, for an additional three

years. For an H-1B visa to be approved, the US Department of Labor (DOL) must certify that

the intended foreign worker does not displace or adversely affect the wages or working

conditions of US workers. However, concerns persist that H-1B workers are underpaid, relative

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[3] http://www.aila.org/content/default.aspx?docid=18974

to comparable native or permanent immigrant workers, and that they thereby drive down the wages for others in their occupations.

H-1B holders can switch employers, provided that the new employer acts as sponsor for a new visa; this affords some occupational mobility and to some extent frees workers from being bound to a particular job and its conditions. Perhaps most importantly for visa holders' long-term considerations, the H-1B allows "dual intent" – that is, applicants can simultaneously pursue a temporary work visa and an employment-based permanent residence visa. Previous versions of the law governing this visa (and current versions of most other visas) require that applicants have a foreign residence that they have no intention of abandoning.[4]

A cap of 65,000 H-1B visas per year was established in the first year. This figure has fluctuated considerably in subsequent years, as concerns about attracting skilled labor have influenced legislation. Table 1 shows the caps for H-1B visas in each year, the number of visas issued, and how many visas went unused.[5]

Subsequent legislation has also attached unique characteristics to the H-1B visa. For instance:

- October 2000, American Competitiveness in the Twenty-First Century Act (AC-21): employers that are government research institutions, universities, or other nonprofits are exempt from the numerical cap.

- Also, up to 20,000 H-1B visas beyond the cap are available to those foreign temporary workers who have earned a Master's degree or higher from a university in the U.S.

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[4] http://www.migrationpolicy.org/ITFIAF/TFI_12_Meyers.pdf
[5] National Foundation for American Policy, "H-1B Visas by the Numbers: 2010 and Beyond," NFAP Policy Brief, March, 2010 http://www.nfap.com/pdf/1003h1b.pdf

- As of January 2004, H-1B1 visas are available for citizens of Chile (1,400 spots) and Singapore (5,400). These do **not** carry dual intent, and are only valid and renewable in one-year increments.

3. Data and Descriptive Statistics

For the H-1B analysis we use individual data from USCIS obtained through a FOIA request. These are administrative data from the I-129 Form, "Petition for a Nonimmigrant Worker," and they cover all individuals who received an H-1B visa from 2000 to 2010. The universe contains both new and continuing visas and the records include key information such as occupation, industry, educational attainment, age, country of origin and annual earnings. With the exception of presenting information on the trend of the number of H-1B visas issued for each of those years, we focus our analysis on the most recent year for which we can create a suitable comparison sample from the American Community Survey: 2009. For that year, in our USCIS data, there were 214,271 H-1B visas issued, of which 86,300 were new and 127,971 were continuing visas.

Figure 1 shows the number of H-1B visas issued over the past eleven years: new visas, continuing visas, visas issued to workers with a Master's degree or higher from a US university, and visas that are exempt from the yearly cap because of the nature of the employer. The figure reveals that although the number of actual visas varies over time, the total number issued is substantially above the annual cap for new visas, as expected. Since the peak of slightly more than 330,000 H-1B visas in 2001, the total has dropped to about 193,000 in 2001.

Our data show that H-1B visa holders come from over 190 countries, but a few countries predominate. Figure 2 shows the distribution of the countries of origin for 2009 H-1B visa

recipients. The top 10 countries constitute 78 percent of the total, with India, China, Canada, the Philippines, and Korea occupying the top spots. This pattern is typical of the last few years.

For our analysis below, we first restrict our attention to those individuals between the ages of 22 and 64 with at least a Bachelor's degree (more than 99% of H1-Bs in 2009). We then further restrict our analysis to those working in the five major STEM occupation groups detailed below (constituting 74% of the 2009 H-1B population).

To shed light on how foreign temporary H-1B workers compare to US workers, we use data from the 2009 American Community Survey to create a sample of naturalized immigrant and US born workers. As with the USCIS sample, we restrict the ACS sample to individuals with at least a Bachelor's degree who are between the ages of 22 and 64. Furthermore, given that the vast majority of H-1B workers are employed full-time, we impose the restriction of being employed in the survey period and usually working at least 30 hours per week. These restrictions yield a sub-sample of 15,051 naturalized immigrants and 151,228 natives.

Our data show that H-1B workers on average are younger and more highly educated than both naturalized immigrant and US born workers (Table 2). The average age of H-1Bs is about 32 years while it is 43.6 and 41.4 years respectively for immigrants with US citizenship and for natives. Close to 60 percent of US born workers in our high-skilled sample have no formal education beyond a Bachelor's degree (the lowest schooling level in our sample), while only about 41 percent among H-1Bs have no advanced degree. H-1Bs are more than twice as likely to possess a non-professional doctoral degree than are US born workers (12.7 percent vs. 4.6 percent). More than 1/3 of H-1Bs obtained an advanced degree (Master's or higher) in the US.

High-skilled temporary workers are concentrated in a handful of industries. Roughly 42 percent of H-1Bs are in information technology (IT) occupations, whereas slightly less than 10

percent of US born workers with at least a Bachelor's degree are in IT. H-1Bs are also disproportionately concentrated in engineering (9.2 percent versus 4.7 percent among natives), mathematics and sciences (5.0 and 3.1 percent respectively) and college and university teaching (8.2 and 4.8 percent respectively). Of our defined occupation groups, native workers are more concentrated only in health occupations (15.6 percent among natives and 8.3 percent among H-1Bs).

Mean and median annual earnings are higher among H-1Bs than among US born workers with at least a Bachelor's degree but lower than they are among naturalized immigrants. The average annual earnings of about $78,200 of H-1Bs is about 10 percent higher than the average annual earnings of our sample of US born workers ($71,200). Although median annual earnings are lower for both groups, the H-1B earnings advantage is roughly the same. Relative to native workers, the data also suggest higher mean annual earnings of about 20 percent among naturalized immigrants with at least a Bachelor's degree.

Overall, the data point toward both quite high earnings and skill levels of H-1B workers compared to US born workers. The descriptive statistics also point toward a concentration of these high-skilled foreign born temporary workers in relatively few occupations typified by high earnings. In fact, it is plausible that the concentration of these occupations is what drives the descriptive statistics suggesting relatively high earnings among H-1Bs. Hence, a more informative comparison should be made by occupation group. Given the policy context of the H-1B debate, our focus is on STEM occupations. For the remainder of our discussion and analysis we restrict our USCIS and ACS samples further to five major STEM occupation groups: information technology, engineering, math and sciences, health and post-secondary education.

Table 3 shows that even within occupation groups H-1Bs are younger and more educated than US born workers with at least a Bachelor's degree. For example, in the occupation group that has been the focus of much previous work – information technology – fewer than ¼ of US born workers have post-graduate degrees while close to ½ of H-1Bs are in this educational attainment group with advanced degrees. Noteworthy is also the young age of these H-1B IT workers: they are on average 10 years younger than their US born counterparts.

It is unclear whether within-occupation earnings are expected to be higher among H-1Bs given that they have higher educational attainment but also less experience than US born high-skilled workers. The data show that the mean and median annual earnings of H-1B workers within occupation groups are generally lower than those of US born workers (Table 4). The earnings gap varies from about 11 percent in mean and median annual earnings in Math and Sciences occupations to about 1 percent in average earnings in post-secondary education. Among H-1B workers in health occupations the average annual earnings is even higher than it is among native workers although this does not hold for the median earnings.

There are a number of potential sources for the observed earnings differences shown in Tables 2 and 4, and our data include some of the plausible determinants. Prime candidates are the age and educational attainment differences shown in Table 3. The five occupation groups that we define also include a number of specific occupations and it possible that, within a given occupation group, differences in more precisely defined occupations play a role in explaining earnings differences. It is also possible that differences between the industries in which US workers and H-1Bs work contribute to the earnings gaps. To provide a clearer picture of how the earnings of H-1B workers compare to those of US born workers (and naturalized immigrants) we next turn to our regression analysis.

4. Earnings Analysis

We estimate OLS regressions of log annual earnings first for the pooled sample of the included STEM occupations and then separately by occupation group. Recognizing that earnings are likely to change with more US-specific experience (and that the renewals may be a selective subset of H-1Bs), we include in addition to a dummy variable for H-1B visa holders a separate variable for H-1B continuation (i.e., a variable equal to one for the subset of H-1Bs who received a renewal). The estimated H-1B coefficient represents the upon-arrival log earnings difference between new H-1Bs and US born workers in that occupation group. The change in earnings that is associated with a renewal is captured by the estimated H-1B continuation coefficient. Given this model specification, the sum of the two estimated H-1B coefficients represents the earnings difference between continuing H-1B and US born workers. We also include naturalized immigrants in an effort to provide another benchmark for the earnings of H-1B workers. Hence, the coefficient on the naturalized immigrant indicator variable represents the log earnings difference between US born workers and naturalized immigrants. The estimated log annual earnings differences in the pooled sample, as well as by occupation group, are shown in Table 5 (with more detailed results presented in Appendix Tables A1-A6, including lists of specific occupations included in the occupation groups).

While unadjusted earnings are not statistically different between new H-1Bs and US born high-skilled workers, H-1Bs who renewed their visa have about 15 percent higher earnings (shown as Model Specification 1 in Table 5). However, once age (Model Specification 2) and

education (Model Specification 3) are controlled for, the estimates reveal significantly higher earnings among both new and continuing H-1Bs, by more than 20 percent. As the results when occupation and industry fixed effects are included show (Model Specification 4), this is partly explained by the higher concentration of H-1Bs in relatively highly remunerated occupations (adding industry fixed effects to a specification with occupation fixed effects has virtually no impact on the estimated earnings differences). The estimates show that the conditional earnings difference between H-1Bs and US born workers is about 10 percent, in favor of the temporary high-skilled foreign workers. Notably, the influence of differences in occupation concentrations on the relative earnings of H-1Bs and US born workers suggests that separate analysis by occupation is worthwhile. Furthermore, this will help identify specific STEM occupations where H-1Bs are relatively successful and hence provide policy relevant information for targeting purposes. Also, the existing research claiming that H-1Bs are not very skilled and underpaid compared to US born workers has exclusively focused on IT jobs, by far the most common H-1B occupation group, thus warranting special attention.

New H-1B workers in IT occupations earn about 7 percent less than US born IT workers (Model Specification 1 in Table 5). However, our data also indicate that those renewing their visas receive a 16 percent salary bump pointing toward an earnings advantage for H1-B IT workers overall. Not surprisingly, the earnings differences are sensitive to controlling for age differences. Once age variables are added to the regressions (Model Specification 2) earnings disadvantage turns to an H-1B salary premium of nearly 18 percent for new H-1Bs followed by an increase of close to 5 percent for those renewing their visas. This earnings advantage is to some extent driven by the higher schooling levels of H-1Bs compared to US born workers. Once controls for education are added (Model Specification 3) the overall H-1B earnings advantage

declines somewhat. Lastly, we add occupation and industry fixed effects (Model Specification 4). These results suggest that newly arrived H-1B workers earn close to 7 percent more than US born workers of the same age, education and specific IT occupation, with an additional increase of about 5 percent for those renewing their visas.

Results for the other occupation groups are somewhat less dramatic. For engineering, newly arrived H-1B workers appear to earn about 8 percent less than their US born counterparts in the unadjusted model specification; this deficit is almost exactly counteracted upon renewal of the visa. Once age differences are included, the dynamics reverse: recently arrived H-1Bs appear to enjoy a 13 percent advantage over US born workers, with no statistically reliable evidence of earnings differences between new and renewed visa holders. When educational differences are accounted for, the magnitude (and statistical significance) of the earnings differences begin to diminish. Inclusion of occupation and industry fixed effects barely changes those results, and in both of these latter models, the results are statistically indeterminate.

In math and science occupations, we also see an initial earnings deficit for new H-1B visa holders (about 9%), corrected upon visa renewal (an increase of about 10%). Accounting for age differences reveals an advantage of about 10-12 percent, but this result is not robust to the inclusion of educational attainment or occupation/industry fixed effects – the full model fails to reveal convincing evidence of earnings differences between H-1Bs (and also naturalized citizens) and their observationally similar US born workers.

In health occupations, H-1B workers appear to earn more than US born workers across the board. The unadjusted advantage of less than 30 percent for continuing H-1Bs grows to nearly 41 percent with the inclusion of age differences. Again, the magnitude and statistical significance of the earnings advantage begin to decline when education is accounted for, and the

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full model specification results fail to reveal a significant advantage for new H-1Bs. A 10 percent advantage for new H-1Bs is not statistically significant, and a 5.5% increase for visa renewal is only marginally significant providing only weak evidence of higher earnings among continuing H-1Bs relative to observationally similar natives.

New H-1B workers in post-secondary education occupations earn 5 percent more than US workers, and enjoy another 5 percent boost upon visa renewal. Age differences appear to play a role and the H1-B advantage is greater once this is adjusted for. The advantage however is overstated due to the higher proportion of H1-Bs with doctorate degrees. The estimates based on a specification with educational controls reveal a smaller advantage for new H-1B workers of about 13 percent relative to their US born counterparts. The inclusion of detailed occupational and industry fixed effects does not change these results appreciably.

Overall, the data point toward a picture of comparatively highly skilled workers with earnings at least on par with those of US born workers. However, although the unique data utilized here provide some clear advantages, one potential shortcoming is that our individual level USCIS data do not contain information on two potentially relevant factors: gender and geographic location of the H-1B workers. It is quite plausible that H-1Bs are more likely to reside in high earnings areas like California's Silicon Valley, and are disproportionately male. The concern, then, is that the lack of controls for these factors in our empirical models leads to estimates of earnings differences that favor H-1Bs.

To shed light on this possibility we turned to the 2009 ACS data and generated a sub-sample aimed at including a high proportion of H-1Bs (but, unavoidably, also a high proportion of other temporary workers and immigrants with legal permanent resident status). The proxy sub-sample consists of non-naturalized high-skilled immigrants in the above occupation groups

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who had been in the US for less than six years. The assumption is that this sub-sample's gender composition and geographic distribution is sufficiently close to that of H-1Bs. We then re-estimated all Model 4 specifications using the pseudo-H-1B ACS sub-sample in place of the actual USCIS H-1Bs. Next we estimated model specifications that included a gender indicator variable and Metropolitan Statistical Area fixed effects. The changes in the pseudo-H-1B coefficients then provide information about the sensitivity of our results and conclusions with respect to the missing gender and geographic location information. The results (not shown but available upon request) indicate that although the estimates in Table 1 overstate somewhat the log annual earnings of H-1Bs relative to US born workers, the impact of including gender and geographic controls is not sufficient to overturn the overall conclusion that H-1Bs have earnings that are no lower than those of comparable US born workers, and that are quite possibly higher in some occupations. The magnitude of the change in the H-1B coefficients is in a relatively narrow range of about 2-4 percent.

5. Conclusions

Asserted low skills and earnings of H-1B workers are core criticisms against the program and claims raised in calls for program changes. Largely due to lack of access to appropriate data, previous research has not provided clear evidence either supporting or refuting these claims. 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 US born workers. In fact, we find that overall H-1B workers in STEM occupations have higher earnings than their otherwise observationally similar US born counterparts. In our occupation-specific analysis we find that H-1B workers in

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two of the five occupation groups analyzed (the largest occupation group, IT, and post-secondary education) have higher earnings than their otherwise observationally similar US 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. Overall, the data point towards a picture of comparatively highly skilled workers with earnings at least on par with those of US born workers.

Our results with respect to H-1Bs are consistent with those of Mithas and Lucas (2010) and Hunt (2011) for all temporary workers and provide further evidence that high-skilled temporary workers do well in the US labor market. However, it is important to point out that the higher earnings of H-1Bs at current cap levels do not mean that an expansion of the program will lead to similarly positive outcomes. Beyond the scope of this paper is the important, and empirically challenging, question of the impact of H-1Bs on the earnings and employment of US born workers. The findings provided here, however, strongly suggest that research and the debate surrounding the H-1B visa program should move beyond the fundamental question of the relative skill and earnings of these temporary workers.

References

Hira, Ron. (2007) "Outsourcing America's Technology and Knowledge Jobs: High-Skill Guest Worker Visas are Currently Hurting Rather than Helping Keep Jobs at Home. Economic Policy Institute Briefing Paper no. 187.

Hunt, Jennifer (2011) "Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa" *Journal of Labor Economics*, 29:3, pp. 417-457.

Matloff, Norman (2008) "H-1Bs: Still Not the Best and the Brightest", Center for Immigration Studies Backgrounder.

Matloff, Norman (2003) "On the need for reform of the H-1B Nonimmigrant Work Visa in Computer-Related Occupations". *University of Michigan Journal of Law Reform*, 36:4, pp. 815–914.
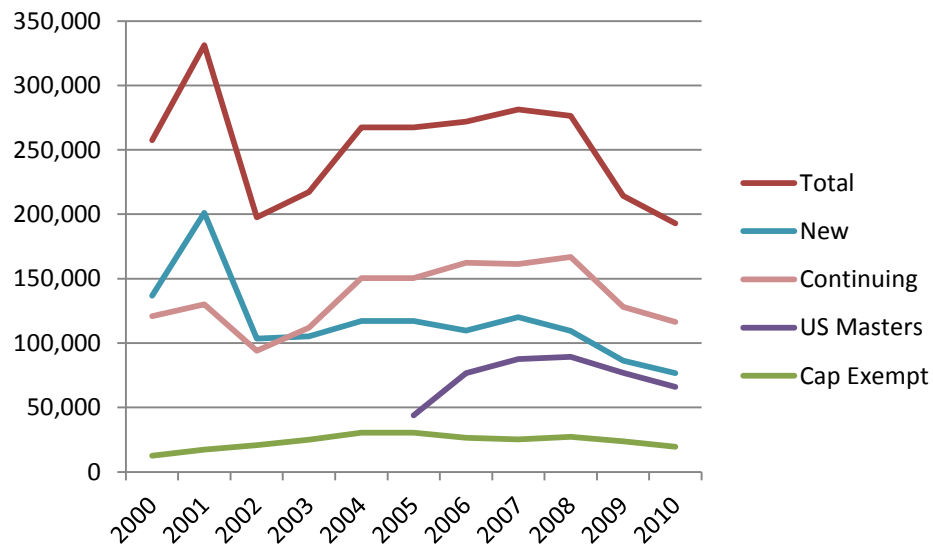
Miano, John (2008) "H-1B Visa Numbers: No Relationship to Economic Need", Center for Immigration Studies Backgrounder.

Miano, John (2007) "Low Salaries for Low Skills: Wages and Skill Levels for H-1B Computer Workers, 2005", Center for Immigration Studies Backgrounder.

Mithas, Sunil and Henry C. Lucas Jr. (2010) "Are Foreign IT Workers Cheaper? U.S. Visa Policies and Compensation of Information Technology Professionals", *Management Science*, 56:5, pp. 745–765.
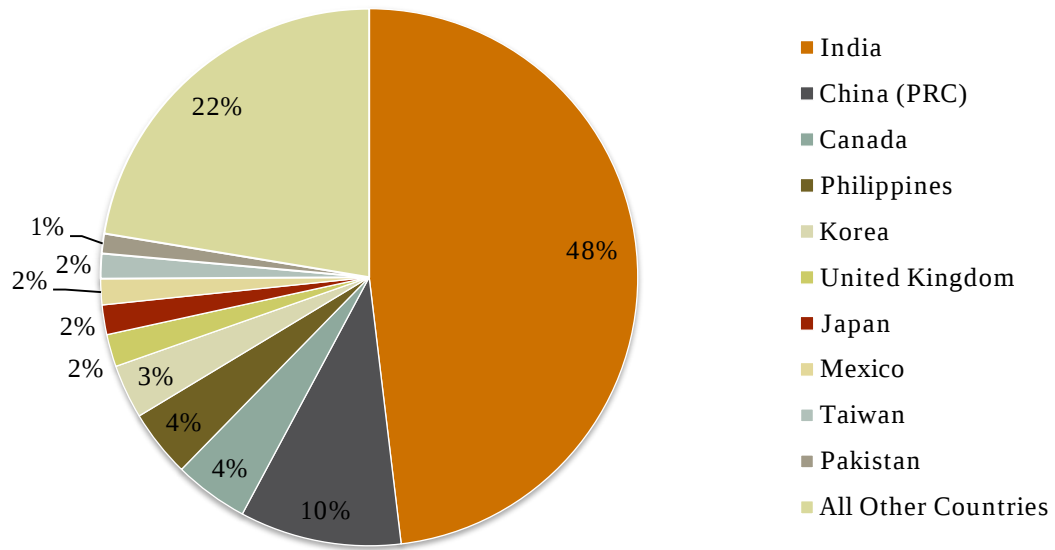
United States Government Accountability Office (2011) "H-1B Visa Program: Reforms Are Needed to Minimize the Risks and Costs of Current Program"

Figure 1.
H-1B Visas Issued, 2000-2010

Figure 2.
Total H-1B Visas, 2009: Top Ten Countries of Origin

Source: USCIS data, 2009

Table 1.
New H-1B Visas Issued against the Cap, by Year

Year	CAP*	#Issued	#Unused
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

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.

Table 2.

Descriptive Statistics, by Immigrants Status, College Educated Workers in Any Occupation, Age 22-64, 2009.

| | Immigrants | | US Born |
	H-1B	Naturalized	
Age	32.0	43.6	41.4
Bachelor's	41.1%	51.4%	58.9%
Master's	40.3%	29.9%	31.0%
Doctoral	12.7%	9.2%	4.6%
Professional	5.8%	9.5%	5.5%
US Advanced Degree	36.2%	N/A	N/A
Cap Exempt Employer	11.1%	N/A	N/A
Occupation			
Information Technology	41.7%	18.5%	9.5%
Engineering	9.2%	8.1%	4.7%
Math and Sciences	5.0%	5.2%	3.1%
Health	8.3%	23.7%	15.6%
Post-Secondary Education	8.2%	4.9%	4.8%
All Other	27.6%	39.6%	62.2%
Annual Earnings			
Mean	78,184	85,420	71,192
Immigrant-Native Difference	9.8%	20.0%	
Median	64,000	70,000	57,000
Immigrant-Native Difference	12.3%	22.8%	
Number of Observations	211,710	15,051	151,228

Table 3.
Age and Educational Attainment by Immigrants Status and Occupation, College Educated
Workers, Age 22-64, Select Occupations, 2009.

	Immigrants		US Born
	H-1B	Naturalized	
Information Technology			
Age	30.6	42.2	40.6
Bachelor's	50.9	53.4	76.9
Master's	46.9	40.3	20.9
Professional	0.2	1.5	0.9
Doctoral	2.0	4.8	1.3
US Advanced Degree	27.8%	N/A	
Engineering			
Age	32.1	44.4	41.1
Bachelor's	32.6	51.5	74.0
Master's	51.9	38.1	23.4
Professional	0.3	2.0	1.0
Doctoral	15.2	8.4	1.7
US Advanced Degree	55.9%	N/A	
Math and Sciences			
Age	33.5	44.9	40.4
Bachelor's	13.4	29.3	47.6
Master's	28.2	27.1	29.5
Professional	3.3	8.9	3.1
Doctoral	55.1	34.8	19.8
US Advanced Degree	51.5%	N/A	
Health			
Age	32.8	44.9	42.0
Bachelor's	27.4	51.0	53.8
Master's	13.9	12.1	19.3
Professional	49.7	29.6	21.5
Doctoral	9.0	7.4	5.4
US Advanced Degree	21.8%	N/A	
Post-Secondary Education			
Age	34.9	48.1	44.6
Bachelor's	4.1	11.8	19.4
Master's	16.7	21.1	35.0
Professional	9.9	4.8	5.3
Doctoral	69.3	62.3	40.3
US Advanced Degree	57.4%	N/A	

Table 4.
Mean and Median Annual Earnings by Immigrant Status and Occupation, College Educated
Workers, Age 22-64, Select Occupations, 2009.

	Information Technology	Engineering	Mathematics and Sciences	Health	Post-Secondary Education
Mean Annual Earnings					
H-1B	76,698	80,885	67,640	110,878	61,398
Naturalized	88,791	88,953	84,655	107,237	83,226
US Born	79,118	85,821	76,509	87,629	62,087
H1B-Naturalized Difference	-13.6%	-9.1%	-20.1%	3.4%	-26.2%
H1B-US Born Difference	-3.1%	-5.8%	-11.6%	26.5%	-1.1%
Median Annual Earnings					
H-1B	68,000	73,000	58,000	60,000	49,000
Naturalized	85,000	87,000	75,000	80,000	70,000
US Born	74,000	80,000	65,000	63,000	55,000
H1B-Naturalized Difference	-20.0%	-16.1%	-22.7%	-25.0%	-30.0%
H1B-US Born Difference	-8.1%	-8.8%	-10.8%	-4.8%	-10.9%

Table 5.
OLS Regressions Results, Log Annual Earnings Differences, Immigrants-Natives, by Immigrant Status, Pooled and by Select Occupations, 2009.

	Model Specification			
	1	2	3	4
Pooled				
H-1B Visa	-0.032	0.225	0.203	0.099
	(1.38)	(6.82)	(4.37)	(5.22)
H-1B Visa*Continuation	0.154	0.039	0.061	0.036
	(5.72)	(2.61)	(3.03)	(1.66)
Naturalized	0.173	0.108	0.085	0.028
	(6.90)	(4.27)	(4.47)	(1.47)
R-Squared	0.008	0.131	0.190	0.298
Number of Observations		217,536		
Information Technology[a]				
H-1B Visa	-0.068	0.176	0.127	0.067
	(1.99)	(7.46)	(5.71)	(2.70)
H-1B Visa*Continuation	0.162	0.046	0.052	0.050
	(6.56)	(2.00)	(2.33)	(2.10)
Naturalized	0.118	0.074	0.042	0.021
	(4.50)	(3.10)	(2.19)	(1.28)
R-Squared	0.008	0.107	0.119	0.163
Number of Observations		104,598		
Engineering[b]				
H-1B Visa	-0.077	0.126	0.031	0.036
	(2.61)	(4.45)	(1.16)	(1.26)
H-1B Visa*Continuation	0.075	-0.021	-0.018	-0.015
	(3.08)	(1.63)	(1.16)	(1.08)
Naturalized	0.040	-0.027	-0.067	-0.070
	(1.61)	(1.18)	(3.33)	(3.75)
R-Squared	0.001	0.170	0.192	0.221
Number of Observations		27,458		
Math and Sciences[c]				
H-1B Visa	-0.091	0.117	-0.017	-0.057
	(2.56)	(4.73)	(0.49)	(1.77)
H-1B Visa*Continuation	0.102	-0.019	-0.016	-0.013
	(5.03)	(0.97)	(0.65)	(0.68)
Naturalized	0.137	0.026	-0.032	-0.038
	(3.39)	(0.87)	(1.20)	(1.32)
R-Squared	0.007	0.205	0.247	0.332
Number of Observations		15,882		

	Health[d]			
H-1B Visa	0.037	0.250	0.082	0.097
	(1.08)	(9.03)	(1.21)	(1.07)
H-1B Visa*Continuation	0.262	0.158	0.097	0.055
	(7.05)	(4.58)	(2.44)	(1.67)
Naturalized	0.195	0.124	0.074	0.054
	(5.37)	(3.06)	(2.41)	(1.44)
R-Squared	0.010	0.120	0.277	0.331
Number of Observations		44,514		

	Post-Secondary Education[e]			
H-1B Visa	0.046	0.340	0.136	0.135
	(1.59)	(12.58)	(4.33)	(4.28)
H-1B Visa*Continuation	0.054	-0.068	-0.046	-0.045
	(2.60)	(2.31)	(1.57)	(1.54)
Naturalized	0.315	0.196	0.124	0.124
	(7.21)	(5.50)	(4.69)	(4.67)
R-Squared	0.016	0.272	0.356	0.359
Number of Observations		25,084		

Specification Controls for				
Age	No	Yes	Yes	Yes
Education	No	No	Yes	Yes
Occupation	No	No	No	Yes
Industry	No	No	No	Yes

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week.

[a] Specific occupations included: Computer Programmers, Computer Software Engineers, Network Systems and Data Communications Analysts, Computer Support Specialists, Network and Computer Systems Administrators and Database Administrators.

[b] Specific occupations included: Aerospace Engineers, Computer Hardware Engineers, Electrical and Electronics Engineers, Civil Engineers, Mechanical Engineers, Chemical Engineers, Petroleum, Mining and Geological Engineers, Industrial Engineers and Marine Engineers

[c] Specific occupations included: Actuaries, Operations Research Analysts, Miscellaneous Mathematical Science Occupations including Mathematicians and Statisticians, Astronomers and Physicists, Chemists and Materials Scientists, Atmospheric and Space Scientists, Agricultural and Food Scientists, Biological Scientists, Conservation Scientists and Foresters, Medical Scientists, Physical Scientists, All Other Agricultural and Food Science Technicians and Biological Technicians.

[d] Specific occupations included: Physicians and Surgeons, Dentists, Veterinarians, Pharmacists, Registered Nurses, Audiologists, Occupational Therapists, Physical Therapists, Recreational Therapists, Respiratory Therapists, Speech and Language Pathologists, Therapists, All Other Occupational Therapist Assistants and Aides, Physical Therapist Assistants and Aides, Dieticians and Nutritionists, Radiation Therapists, Clinical Laboratory Technologists and Technicians, Dental Hygienists, Diagnostic Related Technologists and Technicians, Miscellaneous Health Technologists and Technicians.

[e] Specific occupation included: Postsecondary Teachers.

Appendix – OLS Log Annual Earnings Results by Occupation.

Table A1.
Pooled STEM Occupations

	Model			
	1	2	3	4
H-1B Visa	-0.032	0.225	0.203	0.099
	(1.38)	(6.82)	(4.37)	(5.22)
H-1B Visa*Continuation	0.154	0.039	0.061	0.036
	(5.72)	(2.61)	(3.03)	(1.66)
Naturalized	0.173	0.108	0.085	0.028
	(6.90)	(4.27)	(4.47)	(1.47)
Age 25 to 34		0.584	0.517	0.465
		(24.60)	(22.21)	(23.09)
Age 35 to 44		0.927	0.851	0.787
		(37.85)	(34.80)	(36.66)
Age 45 to 54		1.001	0.927	0.876
		(39.10)	(35.42)	(38.64)
Age 55 to 64		0.991	0.898	0.888
		(47.10)	(40.91)	(44.05)
Master's Degree			0.039	0.105
			(3.34)	(12.66)
Doctoral Degree			0.197	0.386
			(24.94)	(28.58)
Professional Degree			0.538	0.298
			(32.41)	(16.64)
Occupation Fixed Effects	No	No	No	Yes
Industry Fixed Effects	No	No	No	Yes
R-Squared	0.008	0.131	0.190	0.298
Number of Observations		217,536		

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week.

Table A2.
Information Technology

	Model			
	1	2	3	4
H-1B Visa	-0.068	0.176	0.127	0.067
	(1.99)	(7.46)	(5.71)	(2.70)
H-1B Visa*Continuation	0.162	0.046	0.052	0.050
	(6.56)	(2.00)	(2.33)	(2.10)
Naturalized	0.118	0.074	0.042	0.021
	(4.50)	(3.10)	(2.19)	(1.28)
Age 25 to 34		0.441	0.425	0.434
		(10.42)	(10.29)	(10.59)
Age 35 to 44		0.727	0.699	0.701
		(16.30)	(16.10)	(16.18)
Age 45 to 54		0.782	0.750	0.745
		(17.76)	(17.46)	(17.59)
Age 55 to 64		0.714	0.671	0.671
		(16.16)	(15.72)	(16.18)
Master's Degree			0.131	0.117
			(10.56)	(9.62)
Doctoral Degree			0.231	0.208
			(6.57)	(6.48)
Professional Degree			0.036	0.046
			(0.74)	(0.95)
Occupation Fixed Effects	No	No	No	Yes
Industry Fixed Effects	No	No	No	Yes
R-Squared	0.008	0.107	0.119	0.163
Number of Observations		104,598		

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week. Occupations included: Computer Programmers, Computer Software Engineers, Network Systems and Data Communications Analysts, Computer Support Specialists, Network and Computer Systems Administrators and Database Administrators.

Table A3.

Engineering

	Model			
	1	**2**	**3**	**4**
H-1B Visa	-0.077	0.126	0.031	0.036
	(2.61)	(4.45)	(1.16)	(1.26)
H-1B Visa*Continuation	0.075	-0.021	-0.018	-0.015
	(3.08)	(1.63)	(1.16)	(1.08)
Naturalized	0.040	-0.027	-0.067	-0.070
	(1.61)	(1.18)	(3.33)	(3.75)
Age 25 to 34		0.500	0.474	0.489
		(11.40)	(10.79)	(11.86)
Age 35 to 44		0.740	0.704	0.720
		(16.42)	(15.52)	(16.42)
Age 45 to 54		0.859	0.817	0.827
		(19.70)	(18.63)	(19.32)
Age 55 to 64		0.844	0.800	0.815
		(19.78)	(18.59)	(18.67)
Master's Degree			0.132	0.125
			(10.81)	(10.96)
Doctoral Degree			0.353	0.337
			(9.30)	(9.17)
Professional Degree			0.010	0.011
			(0.14)	(0.16)
Occupation Fixed Effects	No	No	No	Yes
Industry Fixed Effects	No	No	No	Yes
R-Squared	0.001	0.170	0.192	0.221
Number of Observations		27,458		

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week. Occupations included: Aerospace Engineers, Computer Hardware Engineers, Electrical and Electronics Engineers, Civil Engineers, Mechanical Engineers, Chemical Engineers, Petroleum, Mining and Geological Engineers, Industrial Engineers and Marine Engineers

Table A4.
Mathematics and Sciences

	Model			
	1	2	3	4
H-1B Visa	-0.091	0.117	-0.017	-0.057
	(2.56)	(4.73)	(0.49)	(1.77)
H-1B Visa*Continuation	0.102	-0.019	-0.016	-0.013
	(5.03)	(0.97)	(0.65)	(0.68)
Naturalized	0.137	0.026	-0.032	-0.038
	(3.39)	(0.87)	(1.20)	(1.32)
Age 25 to 34		0.532	0.458	0.434
		(9.13)	(7.72)	(7.30)
Age 35 to 44		0.931	0.821	0.769
		(15.84)	(14.02)	(13.59)
Age 45 to 54		1.064	0.950	0.889
		(17.20)	(14.84)	(14.85)
Age 55 to 64		1.102	0.973	0.929
		(18.55)	(15.86)	(15.58)
Master's Degree			0.128	0.156
			(6.55)	(8.75)
Doctoral Degree			0.345	0.437
			(12.67)	(17.63)
Professional Degree			0.326	0.424
			(4.19)	(6.61)
Occupation Fixed Effects	No	No	No	Yes
Industry Fixed Effects	No	No	No	Yes
R-Squared	0.007	0.205	0.247	0.332
Number of Observations		15,882		

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week. Occupations included: Actuaries, Operations Research Analysts, Miscellaneous Mathematical Science Occupations including Mathematicians and Statisticians, Astronomers and Physicists, Chemists and Materials Scientists, Atmospheric and Space Scientists, Agricultural and Food Scientists, Biological Scientists, Conservation Scientists and Foresters, Medical Scientists, Physical Scientists, All Other Agricultural and Food Science Technicians and Biological Technicians.

Table A5.

Health

		Model		
	1	**2**	**3**	**4**
H-1B Visa	0.037	0.250	0.082	0.097
	(1.08)	(9.03)	(1.21)	(1.07)
H-1B Visa*Continuation	0.262	0.158	0.097	0.055
	(7.05)	(4.58)	(2.44)	(1.67)
Naturalized	0.195	0.124	0.074	0.054
	(5.37)	(3.06)	(2.41)	(1.44)
Age 25 to 34		0.634	0.447	0.432
		(19.80)	(14.47)	(13.76)
Age 35 to 44		1.014	0.828	0.785
		(30.58)	(25.05)	(23.73)
Age 45 to 54		1.056	0.906	0.867
		(29.30)	(26.19)	(24.79)
Age 55 to 64		1.077	0.914	0.874
		(27.88)	(24.94)	(23.44)
Master's Degree			0.098	0.118
			(7.03)	(8.81)
Doctoral Degree			0.543	0.150
			(21.92)	(5.95)
Professional Degree			0.713	0.194
			(33.18)	(9.70)
Occupation Fixed Effects	No	No	No	Yes
Industry Fixed Effects	No	No	No	Yes
R-Squared	0.010	0.120	0.277	0.331
Number of Observations		44,514		

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week. Occupations included: Physicians and Surgeons, Dentists, Veterinarians, Pharmacists, Registered Nurses, Audiologists, Occupational Therapists, Physical Therapists, Recreational Therapists, Respiratory Therapists, Speech and Language Pathologists, Therapists, All Other Occupational Therapist Assistants and Aides, Physical Therapist Assistants and Aides, Dieticians and Nutritionists, Radiation Therapists, Clinical Laboratory Technologists and Technicians, Dental Hygienists, Diagnostic Related Technologists and Technicians, Miscellaneous Health Technologists and Technicians.

Table A6.
Post-Secondary Education

	Model			
	1	2	3	4
H-1B Visa	0.046	0.340	0.136	0.135
	(1.59)	(12.58)	(4.33)	(4.28)
H-1B Visa*Continuation	0.054	-0.068	-0.046	-0.045
	(2.60)	(2.31)	(1.57)	(1.54)
Naturalized	0.315	0.196	0.124	0.124
	(7.21)	(5.50)	(4.69)	(4.67)
Age 25 to 34		0.695	0.514	0.507
		(9.74)	(7.21)	(7.12)
Age 35 to 44		1.221	0.911	0.900
		(16.56)	(12.60)	(12.51)
Age 45 to 54		1.388	1.082	1.073
		(20.86)	(16.11)	(15.94)
Age 55 to 64		1.471	1.149	1.141
		(21.79)	(17.17)	(17.12)
Master's Degree			0.122	0.131
			(4.18)	(4.46)
Doctoral Degree			0.538	0.547
			(20.59)	(20.78)
Professional Degree			0.519	0.529
			(11.76)	(12.11)
Occupation Fixed Effects	No	No	No	Yes
Industry Fixed Effects	No	No	No	Yes
R-Squared	0.016	0.272	0.356	0.359
Number of Observations		25,084		

Note: The t-statistics shown in parentheses are based on robust standard errors. The sample is restricted to individuals between the ages of 22 and 64 with at least a Bachelor's degree. Furthermore, the sample of naturalized immigrants and US born workers obtained from the 2009 American Community Survey is restricted to those individuals who report being employed in the survey period and usually working at least 30 hours per week. Occupation included: Postsecondary Teachers.