

U.S. IMMIGRATION POLICY AND THE  
COMPETITION WITH CHINA

BY STUART ANDERSON

**EXECUTIVE SUMMARY**

Admitting more foreign-born scientists and engineers will be essential for the U.S. economy and American companies to compete with China and its companies in the 21<sup>st</sup> century, according to new research from the National Foundation for American Policy (NFAP). Americans will benefit from the increased innovation, productivity and economic growth these immigrants and visa holders bring whether the United States pursues a policy of mutually beneficial economic ties with China or adopts a more confrontational posture.

The findings in the research include:

- Among doctorate holders (Ph.D.'s) in the U.S. performing research and development (R&D) as a major work activity, 83% in computer and information sciences and 80% in electrical and computer engineering are foreign-born, according to an NFAP analysis.
- Foreign-born scientists and engineers have been increasingly important in the U.S. labor force but are not displacing natives. Between 2003 and 2021, the number of U.S.-born college graduates employed in STEM-related occupations increased by over 5.5 million, or 69%, according to a National Foundation for American Policy analysis of government data. (Millions of U.S. professionals with STEM degrees also use their skills in jobs not classified by government statistics as STEM occupations, such as management.) U.S.-born college graduates employed in computer occupations increased by over 1.1 million, or 62%, between 2003 and 2021.
- At least since 2008, China's government has designed policies and incentives to attract, retain and entice back scientists and engineers to strengthen its capacity in key technology fields. Analysts have labeled these policies successful. Under a new program called Qiming, the government pays signing bonuses of \$420,000 to \$700,000 for top researchers. Some Chinese scientists and engineers have left China for political and economic reasons but are not choosing the United States.
- Immigration into the United States since 1965 "may have contributed to an additional 8% growth in innovation and 5% growth in wages," according to research by Konrad B. Burchardi (Stockholm University) and other economists. Immigration and a diverse population helped make the United States an innovation superpower, as the country benefited from connections and social interactions between diverse minds that are critical drivers of innovation, according to a [study](#) by Max Posch (University of Exeter) and colleagues.

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- The domestic pipeline gives little hope that U.S.-born scientists and engineers alone can provide a sufficient quantity or quality of scientists and engineers to power industry, create innovations and engage in essential research. At U.S. universities, international students account for 71% of full-time graduate students in computer and information sciences and 73% in electrical and computer engineering.
- America's most significant challenges in attracting and retaining talent remain its immigration policies. The United States lacks an immigration system that allows many international students and other highly skilled individuals to work in America. The United States loses talent and investment to other nations.
- The 85,000 yearly limit on new H-1B petitions for high-skilled foreign nationals is low, equaling 0.05% of the U.S. labor force. Employers have exceeded the U.S. limit on H-1B petitions every fiscal year for the past two decades. H-1B temporary status remains typically the only practical way for an international student or other high-skilled foreign national to work long-term in the United States. Without H-1B status, a foreign national would likely need to leave the United States and work in China, India, Canada or elsewhere.
- A [proposed rule](#) would [narrow the degrees](#) allowed for positions that qualify a foreign-born scientist and engineer in an H-1B specialty occupation, preventing a number of current and future foreign-born professionals from working in the United States.
- Numerical limits act as a significant restriction on immigration and push more jobs outside the United States: “[A]ny policies that are motivated by concerns about the loss of native jobs should consider that policies aimed at reducing immigration have the unintended consequence of encouraging firms to offshore jobs abroad,” concluded a [study](#) by Britta Glennon, an assistant professor at Wharton.
- Under the Immigration Act of 1990, Congress set the annual limit on employment-based green cards at 140,000, including dependents, and kept a per-country limit of 7%. In practice, the two limits have produced long wait times for employment-based immigrants from India and China.
- Failure to update the employment-based immigration limits has resulted in decades-long backlogs for many foreign-born scientists and engineers. In the employment-based second preference (EB-2), the backlog of Indians as of March 2023 was 716,156, according to an NFAP analysis of USCIS data, an increase of 20% since 2020. The [Congressional Research Service \(CRS\)](#) estimated it would take 195 years to eliminate the backlog. CRS concluded, “The total backlog for all three [employment-based] categories [for Indians] would increase . . . to an estimated 2,195,795 individuals by FY 2030.”

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- Immigrants remain vital to the U.S. economy as entrepreneurs and researchers. Immigrants have started more than half (319 of 582, or 55%) of America's startup companies valued at \$1 billion or more, according to [research](#) by the National Foundation for American Policy. NFAP also concluded in [research](#): "Immigrants have founded or cofounded nearly two-thirds (65% or 28 of 43) of the top AI companies in the United States and 70% of full-time graduate students in fields related to artificial intelligence are international students."
- The average annual salary for an H-1B visa holder in computer-related occupations in 2022 was \$129,000, according to USCIS statistics. Legal and government fees could add \$31,800 for an H-1B, including extensions, and \$10,000 to \$15,000 to sponsor an individual for permanent residence.
- According to the Australian Strategic Policy Institute, "China's global lead extends to 37 out of 44 technologies that ASPI is now tracking, covering a range of crucial technology fields spanning defence, space, robotics, energy, the environment, biotechnology, artificial intelligence (AI), advanced materials and key quantum technology areas." Scientific output quantity is not the same as quality, but the ASPI report indicates the relative strength of Chinese academic applied research in specific technology areas. In 2022, the National Science Board in the United States found rapid growth in science in China as of 2018, but not the leading role in so many fields as suggested by the ASPI report.
- A [National Academy of Sciences report](#) concluded, "Internationally, the United States needs to find new and better ways to encourage scientists, engineers, and their families to come to this country to work and live."
- The Semiconductor Industry Association (SIA) has [warned](#) that "the United States faces a significant shortage of technicians, computer scientists, and engineers."
- To evaluate national security and immigration policy, one must weigh the benefits the United States gains from admitting highly skilled immigrants and the costs of America spurning talent. In 2021, the Department of Defense (DOD) released a [Fiscal Year 2020 Industrial Capabilities Report](#) that identified finding sufficient technology talent as essential to U.S. national security. "This issue directly threatens U.S. national self-determination in commerce and geopolitics."
- According to the National Security Commission on Artificial Intelligence (NSCAI), "America is not prepared to defend or compete in the AI era." The report cites shortcomings in U.S. policies to admit highly skilled immigrants as a primary reason America is unprepared. Retaining international students in the United States after graduation is essential to U.S. leadership in artificial intelligence, according to the commission. The report recommended expanding the number and portability of high-skilled temporary visas, exempting

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from employment-based green card limits individuals with Ph.D.'s from U.S. universities in STEM fields, creating an entrepreneur visa and doubling the annual limit on employment-based immigrant visas.

- The United States already operates a longstanding program to vet potential students based on concerns over the transfer of sensitive technologies. The U.S. government also restricts foreign nationals from working on technologies deemed sensitive with national security implications, including via export control attestations when hiring H-1B, L-1 and O-1A visa holders.
  
- The United States has also adopted an extremely restrictive visa policy toward Chinese graduate students. In 2020, the Trump administration issued [Presidential Proclamation 10043](#), which denies a visa to Chinese graduate students who studied at a particular university in China (one with any connection to the country's military) whether or not any negative information exists about the individual. U.S. consular officers have denied thousands of visas under the proclamation and likely dissuaded many more students from applying to U.S. universities.
  
- Before imposing additional requirements, Congress should consider a cost-benefit analysis that weighs current and additional restrictions against the opportunity costs of admitting fewer highly educated or potentially outstanding researchers from China or elsewhere. A National Foundation for American Policy [analysis](#) found every 1,000 Ph.D.'s blocked from attending U.S. universities costs the U.S. economy an estimated \$210 billion in the expected value of patents produced at universities over 10 years and nearly \$1 billion in lost tuition over a decade. That does not include additional economic costs from losing highly productive scientists and engineers prevented from working in the United States and patents or innovations produced outside universities.

Most technology develops over time, with one advancement building on previous or existing research. As such, it benefits a nation's economy to have many scientists and engineers engaging in research. Focusing policies on trying to prevent the entry of the one in 10,000 or one in 1 million who might engage in potentially undesirable conduct is counterproductive.

In *Chip War*, author Chris Miller noted that Soviet industrial espionage in semiconductors backfired by focusing Soviet researchers on past rather than future technology. Miller said, "Attracting talented scientists and engineers has been crucial to U.S. technological capabilities in the past. It is the easiest step the U.S. could take to reinforce its position at the center of the world's technology development ecosystem."

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Many U.S. policymakers, including members of Congress, want the United States to compete with China. Given the priority on knowledge and innovation in the 21<sup>st</sup> century, facilitating the entry of foreign-born scientists and engineers can play a crucial role in any competition between China and the United States.

## FOREIGN-BORN DOCTORATE HOLDERS ESSENTIAL TO U.S. R&D

“Research and development (R&D) is a process intended to create new or improved technology that can provide a competitive advantage at the business, industry, or national level.”<sup>1</sup> In short, R&D is essential to the United States because it increases economic growth and leads to innovation for the country, companies and organizations.

Among doctorate holders (Ph.D.’s) in the U.S. performing R&D as a major work activity, 83% in computer and information sciences and 80% in electrical and computer engineering are foreign-born. Twenty percent of the foreign-born Ph.D.’s working primarily in R&D in the U.S. earned their degrees abroad, relevant to designing legislation aimed at providing green card or temporary visa exemptions for foreign-born Ph.D.’s.<sup>2</sup>

**Table 1**  
**Doctorate Holders in the U.S. Performing R&D as a Major Work Activity (2021)**

Ph.D. Field	U.S.-Born	Foreign-Born	Percent Foreign-Born
<b>Computer and Information Sciences</b>	4,183	20,656	83%
<b>Electrical and Computer Engineering</b>	7,689	30,509	80%

Source: National Foundation for American Policy analysis and tabulation of the National Science Foundation National Survey of College Graduates 2021 R&D is considered a major work activity if a research or product development task is listed as the highest or second highest work activity.

For those advocating a ban on Chinese-born researchers, note that China, with 79,644, is the leading country of origin for foreign-born doctorate holders in the United States performing research and development as a major work activity. India is second with 53,364 and South Korea is third with 17,139.<sup>3</sup> Eliminating Chinese-born scientists and engineers from the future flow of immigrants, temporary visa holders and international students likely would reduce R&D in the United States.

The domestic pipeline gives little hope that U.S.-born scientists and engineers alone can provide a sufficient quantity or quality of scientists and engineers to power industry, create innovations and engage in essential research. At U.S. universities, international students account for 73% of full-time graduate students in electrical and computer

<sup>1</sup> <https://www.inc.com/encyclopedia/research-and-development.html>.

<sup>2</sup> National Foundation for American Policy analysis and tabulation of the National Science Foundation National Survey of College Graduates 2021 R&D is considered a major work activity if a research or product development task is listed as the highest or second highest work activity.

<sup>3</sup> Ibid.

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engineering and 71% in computer and information sciences.<sup>4</sup> In other words, U.S. students, including lawful permanent residents, account for fewer than 30% of the full-time graduate students in essential technology fields at U.S. universities. Employer-paid H-1B fees have funded over \$2 billion in scholarships and support for K-12 students and teachers, providing approximately 100,000 scholarships for U.S. students toward degrees in mathematics, engineering or computer science.<sup>5</sup>

**Table 2**  
**Full-time Graduate Students at U.S. Universities in Key Technology Fields**

Field	Percent of International Students	Number of Full-Time Graduate Students – International Students	Number of Full-Time Graduate Students – U.S. Students
<b>Electrical and Computer Engineering</b>	73%	24,508	9,236
<b>Computer and Information Sciences</b>	71%	53,748	21,889

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.

**IMMIGRATION AND DIVERSITY MADE AMERICA AN INNOVATION SUPERPOWER**

Immigration and diversity played crucial roles in America becoming an innovation superpower. Two studies illustrate the benefits of a diverse population and gaining ideas from a range of sources. The research shows increasing immigration can foster innovation, productivity growth and labor force growth—essential elements to raising U.S. economic growth and a higher standard of living in America.<sup>6</sup>

The first study examined surnames, counties and patents over a nearly 100-year period starting in the 1850s. “The core idea is that many, if not most, innovations arise from the recombinations of existing ideas, approaches and techniques that come together through the connections among diverse minds,” according to a [study](#) by Max Posch (University of Exeter), Jonathan Schulz (George Mason University) and Joseph Henrich (Harvard University).<sup>7</sup>

<sup>4</sup> National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.

<sup>5</sup> *Employer-Paid H-1B Visa Fees For College Scholarships and Job Training*, NFAP Policy Brief, National Foundation for American Policy, April 2019.

<sup>6</sup> See also Stuart Anderson, “Immigration And Diverse Populace Made America An Innovation Superpower,” *Forbes*, October 18, 2023.

<sup>7</sup> Max Posch, Jonathan Schulz and Joseph Henrich, “Surname Diversity, Social Ties and Innovation,” GMU Working Paper in Economics No. 23-31, 7 August 2023 Last revised: 21 September 2023. The authors write, “To measure innovation, we rely on two patent indicators. First, we calculate the total number of patents per capita for each U.S. county for 5 or 10-year periods from the 1850s to the 1940s, based on the Comprehensive Universe of U.S. Patents (Berkes, 2018). Second, we use the breakthrough patent indicator created by Kelly et al. (2021) to capture highly important patents.”

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“Leveraging quasi-random variation in counties’ surname compositions—stemming from the interplay between historical fluctuations in immigration and local factors that attract immigrants—we find that surname diversity increases both the quantity and quality of innovation,” according to the research. “The results support the view that social interactions between diverse minds are key drivers of innovation.”<sup>8</sup>

A November 2021 [study](#) produced by a different group of researchers reached a similar conclusion, “The large inflow of foreign migrants into the U.S. since 1965 may have contributed to an additional 8% growth in innovation and 5% growth in wages.”<sup>9</sup>

“We show a causal impact of immigration on innovation and growth in U.S. counties. To identify the causal impact of immigration, we use 130 years of detailed data on migrations from foreign countries to U.S. counties,” write Konrad B. Burchardi (Stockholm University), Thomas Chaney (Sciences Po), Tarek Alexander Hassan (Boston University), Lisa Tarquinio (University of Western Ontario) and Stephen J. Terry (Boston University). “We show immigration has a positive causal impact on innovation, measured as patenting of local firms, and on economic growth, measured as real income growth for native workers.”<sup>10</sup>

Immigrants and visa holders play a key role in productivity in the United States. “When we aggregate at the national level, inflows of foreign STEM [science, technology, engineering and math] workers explain *between 30% and 50% of the aggregate productivity growth* that took place in the United States between 1990 and 2010,” [according to](#) economists Giovanni Peri (UC, Davis), Kevin Shih (RPI) and Chad Sparber (Colgate University).<sup>11</sup> “There are two ways to fuel economic growth: a larger workforce and workers who are more productive,” according to economist Michael R. Strain, director of economic policy studies at the American Enterprise Institute. “Immigration accelerates the former, and can accelerate the latter. In the United States, immigrants have been responsible for important innovations, along with relatively high rates of entrepreneurship.”<sup>12</sup>

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<sup>8</sup> Ibid.

<sup>9</sup> Konrad B. Burchardi, Thomas Chaney, Tarek Alexander Hassan, Lisa Tarquinio, and Stephen J. Terry, “Immigration, Innovation, and Growth,” NBER Working Paper No. 27075, May 2020, Revised November 2021.

<sup>10</sup> Ibid.

<sup>11</sup> Giovanni Peri, Kevin Shih, and Chad Sparber, “STEM Workers, H-1B Visas, and Productivity in US Cities,” *Journal of Labor Economics*, Vol. 33, No. S1, US High-Skilled Immigration in the Global Economy (Part 2, July 2015), pp. S225-S255.

<sup>12</sup> Stuart Anderson, “Populism Threatens The American Dream Warns Economist,” *Forbes*, May 11, 2020.



## **JOBS FOR U.S.-BORN IN COMPUTER OCCUPATIONS INCREASED SIGNIFICANTLY**

The data show concerns that foreign-born scientists and engineers prevented U.S. engineers and computer specialists from gaining jobs over the past two decades are incorrect. The number of U.S.-born college graduates employed in computer occupations increased by over 1.1 million, or 62%, between 2003 and 2021, according to a National Foundation for American Policy analysis of government data.<sup>13</sup>

**Table 3**  
**Employment of U.S.-Born College Graduates in Computer Occupations: 2003 to 2021**

<b>OCCUPATION</b>	<b>2003</b>	<b>2021</b>	<b>Increase from 2003 to 2021</b>
<b>U.S.-Born Employment in Computer Occupations</b>	1,875,900	3,038,334	+1,162,434 (+62%)

Source: National Foundation for American Policy analysis and tabulations of National Science Foundation 2003 and 2021 National Survey of College Graduates. Note: Computer occupations include jobs NSF classifies as computer science, computer and electrical engineering, computer programmer, or computer and information systems manager.

“The data show the foreign-born have been of increasing importance in these fields, but they are not displacing natives,” according to Mark Regets, a labor economist and senior fellow at the National Foundation for American Policy.

Employment in computer occupations in the United States, including the foreign-born, increased by 80% between 2003 and 2021, illustrating there is not a fixed number of jobs and employment in the technology sector surged while many foreign-born scientists and engineers immigrated.<sup>14</sup>

**Table 4**  
**Employment of U.S.-Born College Graduates in STEM Occupations: 2003 to 2021**

<b>OCCUPATION</b>	<b>2003</b>	<b>2021</b>	<b>Increase from 2003 to 2021</b>
<b>U.S.-Born Employment in Computer Occupations</b>	7,989,092	13,467,659	+5,478,567 (+69%)

Source: National Foundation for American Policy analysis and tabulations of National Science Foundation 2003 and 2021 National Survey of College Graduates.

The number of U.S.-born college graduates employed in all STEM-related occupations (including computer occupations) increased by over 5.5 million, or 69%, between 2003 and 2021. Employment in STEM-related

<sup>13</sup> National Foundation for American Policy analysis and tabulations of National Science Foundation 2003 and 2021 National Survey of College Graduates. Note: Computer occupations include jobs NSF classifies as computer science, computer and electrical engineering, computer programmer, or computer and information systems manager.

<sup>14</sup> Ibid.

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occupations in the United States, including the foreign-born, increased by 76% between 2003 and 2021, additional evidence there is not a fixed number of jobs.<sup>15</sup>

Some people have argued that many students with STEM degrees do not work in STEM fields, implying this is because of immigrants or the United States does not need foreign-born scientists and engineers. In reality, the federal government uses a narrow definition of a STEM occupation that does not include managers, professors and others. The National Science Foundation has explained that *approximately 12 million people* who report “their jobs required at least [a bachelor’s degree] level of technical expertise in one or more Science & Engineering fields” are not included in the federal government’s definition of a STEM occupation.<sup>16</sup> In short, it is misleading to argue that individuals with STEM degrees are not working in STEM occupations.

## CHINA ADVANCES IN SCIENCE

Analysts find it challenging to compare China and the United States in different sectors. Still, some analyses measuring scientific publication output conclude China leads in several technologies.

“Our research reveals that China has built the foundations to position itself as the world’s leading science and technology superpower, by establishing a sometimes stunning lead in high-impact research across the majority of critical and emerging technology domains,” according to the Australian Strategic Policy Institute. “China’s global lead extends to 37 out of 44 technologies that ASPI is now tracking, covering a range of crucial technology fields spanning defence, space, robotics, energy, the environment, biotechnology, artificial intelligence (AI), advanced materials and key quantum technology areas.”<sup>17</sup>

The quantity of scientific output is not always a good measure of quality, and counts of articles exclude much work done at government and industry labs. However, by focusing on highly cited articles and their clusters at specific academic institutions, the ASPI report indicates the relative strength of Chinese academic applied research in specific technology areas.

In 2022, the National Science Board in the United States found rapid growth in science in China as of 2018, although it did not show the leading role in so many fields suggested by the ASPI report.<sup>18</sup>

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<sup>15</sup> Ibid.

<sup>16</sup> Stuart Anderson, “Three Things To Know About Today’s Job Market,” *Forbes*, April 22, 2017.

<sup>17</sup> Jamie Gaida, Jennifer Wong-Leung, Stephan Robin and Danielle Cave, *ASPI’s Critical Technology Tracker*, Australian Strategic Policy Institute, Policy Brief Report No. 69/2023.

<sup>18</sup> National Science Board, *Publications Output: U.S. Trends and International Comparisons, Science & Engineering Indicators 2022*, October 28, 2021.

## CHINA'S EFFORTS TO RECRUIT TALENTED SCIENTISTS AND ENGINEERS

At least since 2008, China's government has designed talent policies and incentives to strengthen its capacity in key technology fields. The government has maintained programs to attract, retain and entice back scientists and engineers.

"In 2008, China's central government announced the Thousand Talents Plan: a scheme to bring leading Chinese scientists, academics and entrepreneurs living abroad back to China," according to *Nature*. "In 2011, the scheme grew to encompass younger talent and foreign scientists, and a decade later, the Thousand Talents Plan has attracted more than 7,000 people overall. For Chinese scientists, the scheme has given them a solid financial incentive to return home. For foreigners, it's an opportunity to join the Chinese system with major administrative hurdles removed."<sup>19</sup>

Applicants could earn a 1 million yuan (US\$151,000) starting bonus and gain access to research funding. For foreign scientists, employers must find jobs for their spouses. The Young Thousand Talents (YTT) program has "targeted foreign and ex-pat Chinese scientists" under 40.<sup>20</sup>

China's programs have succeeded, according to researchers. "Our empirical results show that China's YTT program has been successful in recruiting and nurturing high-caliber scientists and that YTT scientists outperform their overseas peers in post-return publication, mainly owing to their access to greater funding and larger research teams," concluded a report by Dongbo Shi, Weichen Liu and Yanbo Wang published in *Science*. "These results show the potential of talent programs as a policy tool for countries to attract expatriate scientists and promote their productivity."<sup>21</sup>

The Young Thousand Talents program cost the Chinese government little, accounting for only 0.36% of China's academic research and development (R&D) budget in 2017.<sup>22</sup>

"This study has important implications for global academic mobility, because Chinese citizens not only account for a large share of the U.S. and EU STEM Ph.D. graduates but also are among the most productive graduates," according to the authors. "As China continues to invest in higher education and academic talent, we can expect more Western-trained Chinese students to return to China, although findings were mixed; whereas a National

<sup>19</sup> Hepeng Jia, "What is China's Thousand Talents Plan?," *Nature*, 2018.

<sup>20</sup> Ibid.

<sup>21</sup> Dongbo Shi, Weichen Liu and Yanbo Wang, "Has China's Young Thousand Talents program been successful in recruiting and nurturing top-caliber scientists?," *Science*, 5 Jan 2023, Vol 379, Issue 6627, pp. 62-65.

<sup>22</sup> Ibid.

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Science Foundation survey showed that 87% of Chinese STEM PhDs wanted to stay in the U.S., another study revealed that 70% of them would prefer to return to China if offered salaries comparable to what they could expect to receive in the U.S. We can also expect Chinese universities to become more attractive locations for Chinese (and international) students intending to pursue scientific research careers—students who would otherwise study in the U.S. or EU.

“If either of the previously mentioned scenarios materializes, it may disrupt the current model of university science in the U.S., particularly in certain academic fields.”<sup>23</sup>

Since the study in *Science*, China’s government has retooled its efforts to attract top talent. “Two years after it stopped promoting the Thousand Talents Plan (TTP) amid U.S. investigations of scientists, China quietly revived the initiative under a new name and format as part of a broader mission to accelerate its tech proficiency,” reported Reuters in an in-depth investigation.<sup>24</sup>

Reuters wrote that the government uses signing bonuses with a U.S. equivalent of \$420,000 to \$700,000 and subsidies to buy homes and other perks to recruit talented scientists and engineers.<sup>25</sup>

“The primary replacement for TTP is a program called Qiming overseen by the Ministry of Industry and Information Technology, according to national and local policy documents, online recruitment advertisements and a person with direct knowledge of the matter who, as with others, spoke on the condition of anonymity because of the issue’s sensitivity.

“Qiming, or Enlightenment, recruits from scientific and technological fields that include ‘sensitive’ or ‘classified’ areas, such as semiconductors, two of the people said. Unlike its predecessor, it does not publicise awardees and is absent from central government websites, which the sources said reflected its sensitivity,” according to Reuters.<sup>26</sup>

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<sup>23</sup> Ibid. “In biomedical research, for example, the field’s knowledge-production function critically hinges on a large supply of postdoctoral fellows that accept minimal compensation from these temporary positions despite facing dim prospects of finding long-term tenure-track positions. The success of talent programs in countries such as China, and possibly elsewhere, would offer science-oriented international students a viable alternative to U.S. universities and institutions. If this trend persists, the biomedical labs in the U.S. could be facing a shrinking pool of foreign students, raising doubts about their current research model’s sustainability.”

<sup>24</sup> Julie Zhu, Fanny Potkin, Eduardo Baptista and Michael Martina, “Insight: China quietly recruits overseas chip talent as US tightens curbs,” Reuters, August 24, 2023.

<sup>25</sup> Ibid.

<sup>26</sup> Ibid.

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Like the United States, China's economy has experienced shortages of semiconductor and related talent, and Qiming seeks to address those problems.<sup>27</sup> "China's newer talent endeavours, which like the TTP focus on elite-level recruitment, favour applicants trained at top foreign institutions, three sources said. Most of the applicants selected for Qiming have studied at top U.S universities and have at least one Ph.D., said one of these people, adding that scientists trained at Massachusetts Institute of Technology, Harvard and Stanford universities were among those sought by China."<sup>28</sup>

## **AN ALTERNATIVE VIEW: TALENTED CHINESE TECH PROFESSIONALS WANT TO LEAVE**

An objective look would find two simultaneous events: China's recruitment of people into its technology industries and young Chinese tech professionals seeking alternatives to living in China. "Chinese—from [young people](#) to [entrepreneurs](#)—are [voting with their feet](#) to escape political oppression, bleak economic prospects and often grueling work cultures," according to *New York Times* columnist Li Yuan. "Increasingly, the exodus includes tech professionals and other well-educated middle-class Chinese."<sup>29</sup>

"I left China because I didn't like the social and political environment," said Chen Liangshi, 36, who worked on artificial intelligence projects at Baidu and Alibaba, two of China's biggest tech companies, before leaving the country in early 2020. He made the decision after China [abolished](#) the term limit for the presidency in 2018, a move that allowed its top leader, Xi Jinping, to stay in power indefinitely."

"I will not return to China until it becomes democratic," he said, "and the people can live without fear."<sup>30</sup>

Li Yuan interviewed 14 Chinese professionals and "exchanged messages with dozens more" about why they left China to work in other countries despite high-paying jobs in China's tech sector. "But I was most surprised to find that most of them had moved to countries other than the United States," writes Yuan. "China is facing a brain drain, and the United States isn't taking advantage of it."<sup>31</sup>

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<sup>27</sup> Josh Horwitz, "China tackles chip talent shortage with new courses, higher pay," Reuters, March 29, 2023. "Qiming also operates in tandem with recruitment initiatives run by local and provincial authorities and a government-backed hiring drive by Chinese chip companies, according to two of the people and another source familiar with the matter."

<sup>28</sup> Reuters, August 24, 2023.

<sup>29</sup> Li Yuan, "China Is Suffering a Brain Drain. The U.S. Isn't Exploiting It," *New York Times*, October 3, 2023.

<sup>30</sup> Ibid. He works in London for Meta.

<sup>31</sup> Ibid.

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The following sections detail shortcomings in the U.S. immigration system that prevent U.S. companies and the nation from benefitting when talented foreign-born scientists and engineers seek to leave China and other countries.

**SHORTCOMINGS IN AMERICA’S IMMIGRATION SYSTEM**

While China has designed incentive programs for scientists and engineers, America’s greatest challenges in attracting and retaining talent remain restrictive immigration policies. The United States lacks an immigration system that accommodates international students and other highly skilled individuals. As a result, the United States is losing talent and investment to other nations. The most significant problems are analyzed below.

**TOO FEW HIGH-SKILLED TEMPORARY VISAS**

The 85,000 yearly limit on new H-1B petitions for high-skilled foreign nationals is low, equaling 0.05% of the U.S. labor force.<sup>32</sup> As a result, employers have exceeded the U.S. limit on H-1B petitions every fiscal year for the past two decades.

H-1B temporary status remains typically the only practical way for an international student or other high-skilled foreign national to work long-term in the United States. Without H-1B status, a foreign national would likely need to leave the United States and work in China, India, Canada or elsewhere.

**Table 5  
Increase in Eligible H-1B Registrations With Only One Employer**

<b>Fiscal Year</b>	<b>FY 2022</b>	<b>FY 2024</b>	<b>Increase From FY 2022 to FY 2024</b>
<b>Eligible H-1B Registrations With Only One Employer</b>	211,304	350,103	+138,799 (+66%)

Source: National Foundation for American Policy; USCIS.

<sup>32</sup> Under U.S. law, the annual limit on new H-1B petitions is 65,000, with a 20,000-exemption for individuals with a master’s degree or higher from a U.S. university. H-1B petitions for universities and nonprofit and governmental research institutes are exempt from the annual limit. The size of the civilian labor force in the United States was 168 million as of July 2023, according to the Bureau of Labor Statistics.

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U.S. Citizenship and Immigration Services uses a lottery when employers file more H-1B registrations than the annual limit.<sup>33</sup> In each of the past four years, USCIS has selected a lower percentage of eligible H-1B, illustrating the difficulty for high-skilled foreign nationals to obtain long-term work authorization in the United States.<sup>34</sup>

According to USCIS, registrations for FY 2024 increased in large measure due to multiple registrations submitted for the same individuals.<sup>35</sup> Still, data show due to the low annual H-1B limit, USCIS would have rejected the vast majority of H-1B registrations for FY 2024 even if beneficiaries with multiple registrations were excluded from the lottery.<sup>36</sup> A proposed rule would likely address the issue of multiple registrations. However, [the rule](#) also narrows which degrees may qualify an H-1B professional for a position.

**A PER-COUNTRY LIMIT AND TOO FEW EMPLOYMENT-BASED GREEN CARDS**

Under the Immigration Act of 1990, Congress set the annual limit on employment-based green cards at 140,000, including dependents, and kept a per-country limit of 7%. In practice, the two limits have produced long wait times for employment-based immigrants from India and China and, at times, Mexico and the Philippines.<sup>37</sup>

**Table 6  
Backlog and Wait Time for Indians in Employment-Based Second Preference Category**

Category and Place of Birth	Number of People in Backlog	Number of Years to Clear Backlog
Employment-Based 2 <sup>nd</sup> Preference (EB), India	716,156	195 Years*

Source: USCIS as of March 2023, National Foundation for American Policy. \*Congressional Research Service (2020).

Congress set those limits before the demand for high-skilled technical talent exploded due to the internet, smartphones and many other innovations. Failure to update the employment-based immigration limits has resulted

<sup>33</sup> After USCIS selects registrations, employers submit completed applications. USCIS must approve an application for a foreign national to gain H-1B status for the coming fiscal year.

<sup>34</sup> Stuart Anderson, "Immigration Service Likely To Change H-1B Visa Lottery," *Forbes*, May 1, 2023. USCIS selected 14.6% of eligible H-1B registrations for FY 2024, based on a National Foundation for American Policy analysis of government data. In previous years, USCIS selected 26.9% of H-1B registrations for FY 2023, 43.8% for FY 2022. 46.1% for FY 2021.

<sup>35</sup> While multiple job offers are not against the law or immigration rules, it can be a violation. USCIS [announced](#) in July 2023 it conducted a second lottery selection.

<sup>36</sup> For FY 2024, 350,103 eligible registrations had a single employer, or 265,103 more than allowed under the 85,000-annual limit. Anderson, "Immigration Service Likely To Change H-1B Visa Lottery." Excluding beneficiaries with multiple potential employers would still lead to over 75% of H-1B registrations for high-skilled foreign nationals not resulting in H-1B status to work in the United States. Eligible H-1B registrations with only one employer increased by 66% between FY 2022 and FY 2024, evidence of the increased demand for talent.

<sup>37</sup> Annual Report of Immigrant Visa Applicants in the Family-sponsored and Employment-based preferences Registered at the National Visa Center as of November 1, 2022, U.S. Department of State. The family-based preference waiting list is also extensive, totaling 4 million as of November 2022, according to the [U.S. Department of State](#).

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in wait times lasting decades for many foreign-born scientists and engineers. In the employment-based second preference (EB-2), the backlog of Indians as of March 2023 was 716,156, according to an NFAP analysis of USCIS data, an increase of 20% since 2020. The [Congressional Research Service \(CRS\)](#) estimated it would take 195 years to eliminate the backlog.<sup>38</sup>

Examining the overall employment-based backlog, CRS concluded, “The total backlog for all three [employment-based] categories [for Indians] would increase . . . to an estimated 2,195,795 individuals by FY 2030.”<sup>39</sup>

**Table 7**  
**Projected Backlog for Employment-Based Immigrants from India in 2030**

Categories and Place of Birth	Projected Backlog in FY 2030
First Three Employment-Based Immigrant Categories, India	2,195,795

Source: Congressional Research Service (2020).

**LACK OF REFORM COSTS TALENT AND HARMS THE UNITED STATES**

Numerical limits act as a significant restriction on immigration and push more jobs outside the United States: “[A]ny policies that are motivated by concerns about the loss of native jobs should consider that policies aimed at reducing immigration have the unintended consequence of encouraging firms to offshore jobs abroad,” concluded a [study](#) by Britta Glennon, an assistant professor at the Wharton School of Business at the University of Pennsylvania.<sup>40</sup>

In a follow-up to that research, Glennon found, “Firms respond to restrictions on H-1B immigration by increasing foreign affiliate employment at the intensive and extensive margins, particularly in China, India and Canada,” according to the [research](#). “The most impacted jobs were R&D [research and development] intensive ones, but there is some evidence that non-R&D employment was also affected. The paper highlights a means by which firms can circumvent constraining policies and mitigate country-level risk.”<sup>41</sup>

Companies involved in international markets have options and are most likely to offshore jobs in response to immigration visa restrictions. “When U.S. firms are denied H-1Bs, they go abroad, setting up new foreign affiliates and hiring talent there instead of in the U.S.,” said Glennon. “For the most global multinational companies, this is at

<sup>38</sup> NFAP estimate of USCIS data: [https://www.uscis.gov/sites/default/files/document/data/EB\\_I140\\_I360\\_I526\\_performancedata\\_FY2023\\_Q1\\_Q2.pdf](https://www.uscis.gov/sites/default/files/document/data/EB_I140_I360_I526_performancedata_FY2023_Q1_Q2.pdf); *The Employment-Based Immigration Backlog*, Congressional Research Service, March 26, 2020.

<sup>39</sup> Congressional Research Service.

<sup>40</sup> Britta Glennon, *How Do Restrictions on High-Skilled Immigration Affect Offshoring? Evidence from the H-1B Program*, April 5, 2020.

<sup>41</sup> Britta Glennon, *How Do Restrictions on High-Skilled Immigration Affect Offshoring? Evidence from the H-1B Program*, *Management Science*, Articles in Advance, March 15, 2023.



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almost a 1:1 rate. The results demonstrate an important unintended consequence of immigration restrictions: the movement of jobs and talent abroad, with major implications for U.S. competitiveness.”<sup>42</sup> Glennon calculated that multinational companies “hire 0.9 employees abroad for every visa rejection.”<sup>43</sup>

A national survey of more than 500 human resources professionals supported Glennon’s research, finding “86% of companies hired employees *outside the U.S. for roles originally intended to be based inside the country* because of visa-related uncertainties.”<sup>44</sup>

More Indian international students and other foreign nationals have chosen Canada because of the difficulty obtaining H-1B status and later permanent residence in the United States compared to working in temporary status and acquiring permanent residence in Canada.

**Table 8**  
**Indian International Students: U.S. and Canada**

Indian International Students	2016/17 Academic Year	2020/21 Academic Year	Increase/Decrease Between 2016/17 and 2020/21 Academic Years
Canada	41,724	117,018	+180%
United States	186,267	167,582	-10%

Source: [Institute of International Education](#); [Statistics Canada](#).

Since 2013, the number of Indians immigrating to Canada has [tripled](#). Indian international students at Canadian colleges and universities increased by 180% between the 2016/17 and 2020/21 academic years, according to a National Foundation for American Policy analysis. At the same time, at U.S. universities, international students from India decreased by 10%.<sup>45</sup> Indian student numbers in the U.S. [rebounded](#) significantly to 268,923 in 2022/23.

Canada encourages high-skilled professionals to leave the United States and move north. “Canada’s new program to entice H-1B visa holders to the country attracted so many applications that the 10,000 limit was reached in less than 48 hours,” a recent [Forbes article](#) noted. “The response is likely a warning sign to U.S. policymakers that many highly sought foreign-born scientists and engineers in the United States are dissatisfied with the U.S. immigration system and seeking other options.”<sup>46</sup>

<sup>42</sup> See also Stuart Anderson, “U.S. Companies Denied H-1B Visas Hire Talent Abroad,” *Forbes*, April 4, 2023.

<sup>43</sup> Glennon, March 15, 2023.

<sup>44</sup> Ibid. Emphasis added.

<sup>45</sup> Stuart Anderson, “Visa Refusals And Immigration Policies Lead To Fewer Students,” *Forbes*, August 9, 2023. Between 2020/21 and 2021/22, Indian students rose by 19% at U.S. universities, according to the Institute of International Education.

<sup>46</sup> Ibid.

## FOREIGN-BORN SCIENTISTS AND ENGINEERS VITAL TO THE U.S. ECONOMY

Immigrants remain vital to the U.S. economy as entrepreneurs and researchers. Immigrants have started more than half (319 of 582, or 55%) of America’s startup companies valued at \$1 billion or more, according to [research](#) by the National Foundation for American Policy released in 2022. “Nearly two-thirds (64%) of U.S. billion-dollar companies (unicorns) were founded or cofounded by immigrants or the children of immigrants. Almost 80% of America’s unicorn companies (privately-held, billion-dollar companies) have an immigrant founder or an immigrant in a key leadership role, such as CEO or vice president of engineering.” The research shows the importance of immigrants at a time when U.S. immigration policies have pushed talent to other countries.<sup>47</sup>

**Table 9**  
**Full-time Graduate Students at U.S. Universities in Selected AI-Related Fields**

Number of Full-Time Selected AI-Related Fields	Percent of International Students	Number of Full-Time Graduate Students – International Students	Number of Full-Time Graduate Students – U.S. Students
129,501	70%	91,078	38,423

Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents.

[Research](#) released in 2023 finds immigrants are even more vital in the crucial field of artificial intelligence. “Immigrants have founded or cofounded nearly two-thirds (65% or 28 of 43) of the top AI companies in the United States, and 70% of full-time graduate students in fields related to artificial intelligence are international students,” according to an NFAP analysis. “Seventy-seven percent of the leading U.S.-based AI companies were founded or cofounded by immigrants or the children of immigrants. Forty-two percent (18 of 43) of the top U.S.-based AI companies had a founder who came to America as an international student.”<sup>48</sup>

An NFAP analysis found that 70% of full-time graduate students at U.S. universities in selected AI-related fields are international students. In computer and information sciences, the leading area of study for AI researchers, 71% of full-time graduate students at U.S. universities are international students.<sup>49</sup> Retaining international students in the

<sup>47</sup> Stuart Anderson, *Immigrant Entrepreneurs and U.S. Billion-Dollar Companies*, NFAP Policy Brief, National Foundation for American Policy, July 2022.

<sup>48</sup> Stuart Anderson, *AI and Immigrants*, NFAP Policy Brief, National Foundation for American Policy, June 2023. NFAP conducted the research through interviews and gathering information on the 43 U.S. companies on the Forbes AI 50, a list of the top startup companies “developing the most promising business applications of artificial intelligence—companies with compelling visions and the resources and technical wherewithal to achieve them.”

<sup>49</sup> National Science Foundation, National Center for Science and Engineering Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, 2021. National Foundation for American Policy. U.S. students include lawful permanent residents. NFAP examined the degrees in fields outside of computer and information sciences found useful in artificial intelligence. At U.S. universities, international students account for 73% of full-time graduate students in electrical and

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United States after graduation is essential to U.S. leadership in artificial intelligence, according to a Congressionally-paneled AI commission.<sup>50</sup>

A [National Academy of Sciences report](#) concluded, “Internationally, the United States needs to find new and better ways to encourage scientists, engineers, and their families to come to this country to work and live.”<sup>51</sup>

The Semiconductor Industry Association (SIA) has [warned](#) that “the United States faces a significant shortage of technicians, computer scientists, and engineers.”<sup>52</sup>

## **RESPONDING TO OTHER ARGUMENTS ABOUT FOREIGN-BORN PROFESSIONALS**

Policymakers favoring restrictive immigration policies argue foreign-born scientists and engineers are “cheap labor.” However, the average annual salary for an H-1B visa holder in computer-related occupations in 2022 was \$129,000, according to USCIS statistics. The median salary for H-1B professionals in computer-related occupations was \$123,000 in 2022.<sup>53</sup> NFAP estimates a company could spend up to \$31,800 in government and legal costs to file an initial H-1B petition (for three years) and an extension for three additional years, and more to sponsor for permanent residence.

“The USCIS data show H-1B visa holders are paid high salaries, and it contradicts the idea that these are low-skilled people since employers would not pay people with low skills such high salaries,” said Mark Regets, a labor economist and NFAP senior fellow.<sup>54</sup> The median salary for H-1B professionals in computer-related occupations increased by 26% between 2018 and 2022, and the average salary rose by 23%.

To gain approval of an H-1B petition, an employer must pay “at least- (I) the actual wage level paid by the employer to all other individuals with similar experience and qualifications for the specific employment in question, or (II) the prevailing wage level for the occupational classification in the area of employment, *whichever is greater*.”<sup>55</sup>

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computer engineering, 69% in applied mathematics, 65% in statistics, 58% in multidisciplinary data science and 39% in linguistics.

<sup>50</sup> <https://www.nscai.gov/2021-final-report/>.

<sup>51</sup> Ibid.

<sup>52</sup> “America Faces Significant Shortage of Tech Workers in Semiconductor Industry and Throughout U.S. Economy,” News Release, Semiconductor Industry Association, July 25, 2023.

<sup>53</sup> *Characteristics of H-1B Specialty Occupation Workers, Fiscal Year 2022 Annual Report to Congress*, Department of Homeland Security and U.S. Citizenship and Immigration Services, March 23, 2023.

<sup>54</sup> Stuart Anderson, “Immigration Agency Report Shows High H-1B Visa Salaries,” *Forbes*, June 5, 2023.

<sup>55</sup> <https://uscode.house.gov/view.xhtml?req=granuleid%3AUSC-prelim-title8-section1182&num=0&edition=prelim>.

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Economists have concluded in many published studies that H-1B visa holders earn the same or more than comparable U.S. professionals.<sup>56</sup> In a May 2020 NFAP [study](#), University of North Florida economics professor Madeline Zavodny found, “[T]he evidence points to the presence of H-1B visa holders being associated with lower unemployment rates and faster earnings growth among college graduates, including recent college graduates.”<sup>57</sup>

In FY 2021, 66% of approved H-1B beneficiaries earned a master’s degree or higher, according to USCIS.<sup>58</sup> The high levels of education indicate that H-1B visa holders represent highly skilled professionals whose skills are sought in the United States and other countries.

While some argue H-1B visa holders are “indentured,” meaning they cannot change employers, USCIS data show in FY 2022, 123,888 H-1B petitions were approved for H-1B visa holders to switch to a new employer.<sup>59</sup> Such a large number raises doubts about assertions that H-1B professionals are “indentured servants.”

H-1B professionals who wait years for green cards may not want to change employers because it could create the need for a new employer to file for a green card, thereby starting an individual’s wait again. H-1B portability rules passed by Congress were supposed to prevent those circumstances.

The problem would be solved by eliminating the per-country limit, primarily affecting immigrant applicants from India and China, and increasing the employment-based green card limit. Exemptions from the annual limit on green cards for foreign nationals with a master’s degree or Ph.D. in science and engineering fields would be law—and have ended the long waits for many green card applicants, but Sen. Charles Grassley (R-IA) [blocked](#) the measures from being included in the [CHIPS and Science Act](#) in 2022. The House of Representatives passed those exemptions as part of the House bill.<sup>60</sup>

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<sup>56</sup> An analysis by [Glassdoor](#) found, “Across the 10 cities and roughly 100 jobs we examined, salaries for foreign H-1B workers are about 2.8% higher than comparable U.S. salaries on Glassdoor.” After examining the skills and compensation of over 50,000 IT professionals in the United States, University of Maryland researchers Sunil Mithas and Henry C. Lucas, Jr. [wrote](#), “[C]ontrary to popular belief, non-U.S. citizen IT professionals are not paid less compared to American IT professionals.” A [paper for IZA](#) by economists Magnus Lofstrom and Joseph Hayes with the Public Policy Institute of California concluded, “The data indicate that H-1Bs are younger and more skilled, as measured by education, than U.S.-born workers in the same occupations. We fail to find support for the notion that H-1Bs are paid less than observationally similar U.S.-born workers; in fact, they appear to have higher earnings in some key STEM occupations, including information technology.” The Government Accountability Office (GAO) found in electrical/electronics engineering occupations (age group 20-39) the median salary for an engineer in H-1B status was \$5,000 higher than for a U.S. engineer.

<sup>57</sup> Madeline Zavodny, *The Impact of H-1B Visa Holders on the U.S. Workforce*, NFAP Policy Brief, National Foundation for American Policy, May 2020.

<sup>58</sup> *Characteristics of H-1B Specialty Occupation Workers, Fiscal Year 2022 Annual Report to Congress*. Education levels for FY 2022 contained incomplete data.

<sup>59</sup> *Ibid.*

<sup>60</sup> *Ibid.*

## **ADDRESSING SECURITY CONCERNS**

Concerns about espionage and national security connected to immigration should weigh 1) the benefits the United States gains from admitting high-skilled foreign nationals, 2) the existing rules already in place to address espionage and national security and 3) the costs of imposing restrictions.

## **THE BENEFITS OF ADMITTING HIGH-SKILLED FOREIGN NATIONALS**

The U.S. defense establishment believes the lack of technical talent in the United States has reached critical levels. The war in Ukraine illustrates the need for a strong economic and technological base and how modern warfare relies on technical expertise to conduct military operations.

In 2021, the Department of Defense (DOD) released a [Fiscal Year 2020 Industrial Capabilities Report](#) that identified finding sufficient technology talent as essential to U.S. national security.

“Exacerbating the need to strengthen organic software expertise is the national STEM shortage,” according to the report. “Today’s education pipeline is not providing the necessary software engineering resources to fully meet the demand from commercial and defense sectors, and resources required to meet future demands continue to grow. STEM covers a diverse array of professions, from electrical engineers to researchers within the medical field, and includes a range of degree levels from bachelor’s to Ph.D.”<sup>61</sup>

The DOD report noted, “Along with the change in technologies and methods that the software engineering community is adapting by, comes a requirement for a workforce with the necessary talents to effectively employ these enablers. The production of engineers and scientists with U.S. citizenship, and the skills necessary to successfully develop and sustain the software required by the DoD in modern environments, is not keeping up with demand.”<sup>62</sup>

The Department of Defense cited NFAP research in sounding the alarm for an increase in STEM talent.

“As of 2017, American students make up barely 21 percent of the computer science student body and 19 percent of electrical engineering majors among our nation’s universities. Emphasis must be directed toward inspiring the next generation to pursue STEM careers, especially in software engineering.

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<sup>61</sup> *Fiscal Year 2020 Industrial Capabilities, Report to Congress*, prepared by OSD A&S Industrial policy, January 2021.

<sup>62</sup> *Ibid.*

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*“This issue directly threatens U.S. national self-determination in commerce and geopolitics. The STEM shortage in the DIB [Defense Industrial Base] is quickly approaching crisis status. As stated by Arthur Herman, ‘We are fast approaching another Sputnik moment, we can’t afford to ignore.’ The U.S. must create a state-of-the-art STEM education strategy to cope with this reality.”*<sup>63</sup>

As the data cited in the DOD report show, the United States could not employ sufficient scientists and engineers to meet its defense and economic needs without foreign-born talent.

**Artificial Intelligence:** According to the National Security Commission on Artificial Intelligence (NSCAI), which reported to Congress in 2021, “America is not prepared to defend or compete in the AI era.” The report cites shortcomings in U.S. policies to admit highly skilled immigrants as a primary reason America is unprepared.<sup>64</sup>

“[T]he United States needs to win the international talent competition by improving both STEM [science, technology, engineering and math] education and our system for admitting and retaining highly skilled immigrants,” write Eric Schmidt and Robert Work in the report. Schmidt, former CEO and chairman of Google and cofounder of Schmidt Futures, chaired the commission. Work, a former deputy secretary of defense, served as vice chair.

“The United States risks losing the global competition for scarce AI expertise if it does not cultivate more potential talent at home and recruit and retain more existing talent from abroad,” according to the report.<sup>65</sup>

“Immigration reform is a national security imperative,” the report concludes. “Nations that can successfully attract and retain highly skilled individuals gain strategic and economic advantages over competitors. Human capital advantages are particularly significant in the field of AI, where demand for talent far exceeds supply. Highly skilled immigrants accelerate American innovation, improve entrepreneurship and create jobs.”<sup>66</sup>

Among the immigration policies the AI commission recommends:

- *“Expand and clarify job portability for highly skilled workers.*
- *“Recapture green cards lost to bureaucratic error.*

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<sup>63</sup> Ibid. Emphasis added.

<sup>64</sup> <https://www.nscai.gov/2021-final-report/>.

<sup>65</sup> Ibid. Emphasis added. The United States must move aggressively on both fronts. Congress should pass a National Defense Education Act II to address deficiencies across the American educational system—from K-12 and job reskilling to investing in thousands of undergraduate- and graduate-level fellowships in fields critical to the AI future. *At the same time, Congress should pursue a comprehensive immigration strategy for highly skilled immigrants to encourage more AI talent to study, work, and remain in the United States through new incentives and visa, green card, and job-portability reforms.”*

<sup>66</sup> Ibid.

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- “Grant green cards to students graduating with STEM PhDs from accredited American universities.
- “Double the number of employment-based green cards.
- “Create an entrepreneur visa.
- “Create an emerging and disruptive technology visa.”<sup>67</sup>

**Slowing China:** The Commission rejected prohibiting Chinese-born researchers from studying in science and technology fields in the United States and argued such a policy would benefit the Chinese Communist Party.

“Immigration policy can also slow China’s progress,” according to the report. “China’s government takes the threat of brain drain seriously, noting that the United States’ ability to attract and retain China’s talent is an obstacle to the Chinese Communist Party’s (CCP) ambitions. Increasing China’s brain drain will create a dilemma for the CCP—which will be forced to choose between losing even more human capital, further slowing their economic growth and threatening their advancement in AI, or denying Chinese nationals opportunities to study and work in the United States.”<sup>68</sup>

Schmidt argued many promising researchers in AI in the United States were born in China. “If you were to get rid of all of them . . . you will, in fact, hurt America’s AI leadership.”<sup>69</sup>

## UNDERSTANDING EXISTING NATIONAL SECURITY RESTRICTIONS

Some candidates and elected officials have called for broad bans on Chinese-born scientists and engineers or foreign nationals more generally in technical fields.<sup>70</sup> However, these calls ignore current restrictions in U.S. law and policy to address national security concerns.

**Export Control Laws:** The U.S. government already restricts foreign nationals from working on technologies deemed sensitive with national security implications. The I-129 form for H-1B petitions, the visa category most common for high-skilled professionals, contains an export control attestation for employers. Employers also must follow these regulations for L-1 and O-1A visa holders.

“Part 6 of Form I-129 is an attestation regarding the release of controlled technology or technical data to foreign persons in the United States,” according to U.S. Citizenship and Immigration Services. “If a license is required, the

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<sup>67</sup> Ibid.

<sup>68</sup> Ibid.

<sup>69</sup> “We looked at the question of how important are Chinese researchers for the AI effort, in our report, and it turns out the Chinese researchers are the number one authors on the key papers,” said Schmidt at a [Congressional hearing](#).

<sup>70</sup> Adam Shaw, “Pence calls for ban of H-1B visas to Chinese nationals in US tech companies,” *Fox Business*, July 14, 2021.

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petitioner must certify that the beneficiary will not access such technology or data until the license has been obtained.”<sup>71</sup>

USCIS explains: “The Export Administration Regulations (EAR) and the International Traffic in Arms Regulations (ITAR) require U.S. persons, including companies, to seek and receive authorization from the U.S. government before releasing controlled technology or technical data to foreign persons in the United States (15 CFR Parts 770-774 and 22 CFR Parts 120-130). U.S. companies must seek and receive a license from DOC and/or DOS before releasing controlled technology or technical data to nonimmigrant workers.”<sup>72</sup>

**Visa Restrictions:** The Trump administration imposed highly restrictive policies on Chinese graduate students, and the Biden administration maintained the visa policy. The proclamation (10043) denies a visa to individuals who studied at a particular university whether or not any negative information exists about the individual.

In 2020, the Trump administration issued [Presidential Proclamation 10043](#) on the “Suspension of Entry as Nonimmigrants of Certain Students and Researchers from the People’s Republic of China.” The proclamation denies entry to the United States of any temporary visa holder from China on “an F or J visa to study or conduct research in the United States . . . and who either receives funding from or who currently is employed by, *studies at*, or conducts research at or on behalf of, or has been employed by, *studied at*, or conducted research at or on behalf of, *an entity in the PRC* that implements *or supports* the PRC’s ‘military-civil fusion strategy.’” (Emphasis added.)<sup>73</sup>

Jeffrey Gorsky, former Chief of the Legal Advisory Opinion section of the Visa Office in the State Department and an advisor to the National Foundation for American Policy, predicted the current impact. “There is already a longstanding program in place to vet potential students based on concerns over the transfer of sensitive technologies,” he said. “This proclamation will exclude persons from the United States based on past or minor associations with PRC entities even if the individuals pass the interagency clearance process. America will lose out on a valuable talent pool and the financial and scientific contributions these students make to U.S. universities and the United States.”<sup>74</sup>

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<sup>71</sup> <https://www.uscis.gov/working-in-the-united-states/temporary-workers/frequently-asked-questions-about-part-6-of-form-i-129-petition-for-a-nonimmigrant-worker>. “Part 6 requires petitioners to affirm that they have reviewed the export control regulations. It further requests petitioners to indicate whether a license is required from either the Department of Commerce (DOC) or the Department of State (DOS) to release technology or technical data to the beneficiary of the petition.”

<sup>72</sup> Ibid.

<sup>73</sup> Presidential Proclamation 10043, published in the Federal Register on June 4, 2020. The proclamation does not apply to undergraduate students.

<sup>74</sup> Stuart Anderson, “Inside Trump’s Immigration Order To Restrict Chinese Students,” *Forbes*, June 1, 2020.



## THE COST OF RESTRICTIONS

A National Foundation for American Policy [analysis](#) found every 1,000 Ph.D.'s blocked from attending U.S. universities costs the U.S. economy an estimated \$210 billion in the expected value of patents produced at universities over 10 years and nearly \$1 billion in lost tuition over a decade. That does not include additional economic costs from losing highly productive scientists and engineers prevented from working in the United States and patents or innovations produced outside universities.

Numbers underestimate the proclamation's impact since Chinese students and researchers who expect to be refused a visa would be unlikely to apply in the first place. In 2021, U.S. consular officers refused 1,964 visas for Chinese nationals due to the presidential proclamation, [according to the State Department](#).<sup>75</sup>

As anticipated with a blanket policy, the proclamation has produced unintended consequences, including pushing Chinese researchers to other countries. The [Wall Street Journal](#) reported the U.S. policy has encouraged more Chinese students to attend schools in Japan. Saudi Arabia is another prominent location for Chinese technology students.<sup>76</sup>

In 2022, a fifth-year Ph.D. student from China focusing on artificial intelligence in the transportation sector was denied a U.S. visa renewal in 2022 under the proclamation after returning to China to visit family in China. She cannot return to her U.S. university and is currently living and researching in China.<sup>77</sup>

During the Trump administration, the Department of Justice also launched the China Initiative, an effort aimed at researchers born in China that ended after evidence of racial profiling and ineffectiveness emerged.

"There is insufficient evidence that academic/economic espionage by Chinese nationals is a widespread problem at U.S. universities," writes Rory Truex, an assistant professor at Princeton University, in a 2021 [paper](#). "After 20 months of ongoing investigations in 2019 and 2020, the 'China Initiative'—a Department of Justice (DOJ) effort—had brought formal charges at only ten U.S. universities or research institutions, and only three cases involved any evidence of espionage, theft, or transfer of intellectual property. Given that there are about 107,000 Chinese citizens in STEM [fields] at U.S. universities at the graduate level or above, current DOJ charges imply a criminality rate in

<sup>75</sup> [https://travel.state.gov/content/dam/visas/Statistics/AnnualReports/FY2022AnnualReport/FY22\\_TableXIX\\_vF.pdf](https://travel.state.gov/content/dam/visas/Statistics/AnnualReports/FY2022AnnualReport/FY22_TableXIX_vF.pdf). The data show 47 people "overcame" the initial refusal in FY 2021. In FY 2022, consular officers refused 1,764 visas on the grounds of a 212(f) proclamation, which included Presidential Proclamation 10043.

<sup>76</sup> <https://www.chinadaily.com.cn/a/202212/09/WS6392a935a31057c47eba3968.html>.

<sup>77</sup> Stuart Anderson, "Chinese Students Still Denied Visas Under Trump Immigration Order," *Forbes*, April 11, 2023.

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this population of .0000934, less than 1/10,000.” (Formal charges are not convictions, and [DOJ has dropped several cases.](#))

An investigation by the [MIT Technology Review](#) found the Department of Justice’s China Initiative investigations devolved primarily into finding disclosure and paperwork violations. “The initiative’s focus increasingly has moved away from economic espionage and hacking cases to ‘research integrity’ issues, such as failures to fully disclose foreign affiliations on forms.”

The *MIT Technology Review* concluded: “Our reporting and analysis showed that the climate of fear created by the prosecutions has already pushed some talented scientists to leave the United States and made it more difficult for others to enter or stay, endangering America’s ability to attract new talent in science and technology from China and around the world.” A former U.S. attorney who helped create DOJ’s China Initiative during the Trump administration [agreed](#) with the *MIT Technology Review* critique.

The China Initiative ended. Using government resources to inform universities and researchers of foreign government activities and grant and disclosure rules while warning about potential espionage threats is not controversial. However, the evidence indicates investigations that target people based on their ethnicity or national origin are likely to raise civil liberty concerns and drive away high-skilled individuals.

**Cost-Benefit Analysis:** The restrictive visa policy toward Chinese graduate students is unlikely to withstand a cost-benefit analysis.

Although security checks are performed now on visas, Congress could mandate specific reviews. However, before imposing additional requirements, Congress should consider a cost-benefit analysis that weighs additional restrictions against the opportunity costs of admitting fewer highly educated or potentially outstanding researchers from China or elsewhere.

## CONCLUSION

To evaluate national security and immigration policy, one must include the benefits the United States gains from admitting highly skilled immigrants. Without such an evaluation, it would be like banning trucks from U.S. highways to address concerns about trucking without considering the costs of depriving the U.S. economy, consumers and employers of the reliable movement of goods throughout the United States.

Most technology develops over time, with one advancement building on previous or existing research. As such, it benefits a nation’s economy to have many scientists and engineers engaging in research rather than focusing

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policies on trying to prevent the entry of one in 10,000 or one in 1 million who might engage in potentially harmful conduct. In the book *Chip War*, author Chris Miller noted that the Soviet Union's industrial espionage in semiconductors backfired by directing Soviet researchers toward past rather than future technology.<sup>78</sup>

Miller recommends more open immigration policies. "Attracting talented scientists and engineers has been crucial to U.S. technological capabilities in the past," according to Miller. "It is the easiest step the U.S. could take to reinforce its position at the center of the world's technology development ecosystem."<sup>79</sup>

Many U.S. policymakers, including members of Congress, want the United States to compete with China. Given the priority on knowledge and innovation in the 21<sup>st</sup> century, facilitating the entry of foreign-born scientists and engineers can play a crucial role in any competition between China and the United States.

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<sup>78</sup> Chris Miller, *Chip War*, New York, NY: Scribner, 2022.

<sup>79</sup> Stuart Anderson, "Chip War: The Battle Over Trade, Immigrants And Semiconductors," *Forbes*, October 24, 2022.

**APPENDIX**

**Appendix Table 1**  
**Percentage of Eligible H-1B Registrations Selected in Lottery by Fiscal Year**

<b>Fiscal Year</b>	<b>Percentage of Eligible H-1B Registrations Selected</b>
<b>FY 2021</b>	46.1%
<b>FY 2022</b>	43.8%
<b>FY 2023</b>	26.9%
<b>FY 2024</b>	14.6%

Source: National Foundation for American Policy; USCIS.

## 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).

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